Vol. 1030 Number 5

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

Route to:

May 31, 1983

U.S.
DEPARTMENT
OF COMMERCE

Patent
and
Trademark
Office

OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

May 31, 1983 Volume 1030 Number 5

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

GENERAL INFORMATION concerning PATENTS.

GENERAL INFORMATION concerning TRADEMARKS.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries see the notice appearing in the Official Gazette at 1017 O.G. 10 on Apr. 13, 1982. For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States, see the notice in the Official Gazette of Sept. 28, 1982 at 1022 O.G. 52.

Note that the domestic PCT fees have been increased as of Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published at 1021 O.G. 11 on Aug. 10, 1982. Also note that the international PCT fees have changed as of Jan. 1, 1983 and the Search Fee for the European Patent Office as Searching Authority changed as of Jan. 22, 1983. The notice regarding the change in international fees and the Search Fee for the European Patent Office appeared at 1025 O.G. 27, on 28 Dec. 1982. The current schedule of fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	670.00
International Fees	
Basic Fees (first 30 pages)	265.00
Basic Supplemental Fee (for each page over 30)	5.00
Designation fee (for each national or regional office)	65.00

GERALD J. MOSSINGHOFF,
Dec. 3, 1982. *Commissioner of Patents and Trademarks.*

Board of Appeals Decisions Rendered in the Month of Apr. 1983

Affirmed	182
Affirmed in Part	15
Reversed	59
Total	256

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,250,775, Re. S.N. 467,331, Filed Feb. 17, 1983, Cl. 82/001.003, MACHINE TOOL AND METHOD, Richard A. Jerue, et al., Owner of Record: *De Vlieg Machine Co., Royal Oak, Mich.,* Attorney or Agent: Steven L. Oberholtzer, Ex. Gp.: 324

4,275,611, Re. S.N. 468,013, Filed Feb. 18, 1983, Cl. 74/471XY, JOYSTICK CONTROLLER, James Graig Asher, Owner of Record: *Atari, Inc., Sunnyvale, Calif.,* Attorney or Agent: Kenneth E. Leeds, Ex. Gp.: 352

4,352,604, Re. S.N. 473,208, Filed Oct. 5, 1982, Cl. 406/28, FEEDING DEVICE FOR CIGARETTE FILTERS AND SIMILAR RODS, Walter Carascon, et al., Owner of Record: *Molins Ltd., Wycombe Bucks, England,* Attorney or Agent: Charles E. Wand, et al., Ex. Gp.: 313

4,354,822, Re. S.N. 483,725, Filed Apr. 11, 1983, Cl. 431,208, ATOMIZER BURNER FOR OIL FIRING PLANT, Ingvard M. Madsen, et al., Owner of Record: *Danfoss A/S, Nordborg, Denmark,* Attorney or Agent: Wayne B. Easton, Ex. Gp.: 345

4,375,320, Re. S.N. 476,505, Filed Mar. 18, 1983, Cl. 424/89, INFECTIOUS BRONCHITIS VACCINE FOR PULTRY, Peter Apontoweil, et al., Owner of Record: *Gist-Brocades N. V., Maddelft, Netherlands,* Attorney or Agent: Hammond & Littell, Weissenberger and Muserlian, Ex. Gp.: 123

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,765,548, Reexam. No. 90/000,364, Requested: Apr. 22, 1983, Cl. 211/126, SWEEP AUGER STRUCTURE, Charles C. Shivvers, Owner of Record: *Inventor,* Attorney or Agent: Rudolph L. Lowell, Ex. Gp.: 355, Requester: Charles C. Shivvers, Corydon, Iowa

3,935,105, Reexam. No. 90/000,366, Requested: May 3, 1983, Cl. 210/138, TUBULAR FILTER IN SETTLER, Stephen N. Mc Ewen, Owner of Record: *Requester,* Attorney or Agent: Hiram P. Settle, Jr., Ex. Gp.: 176, Requester: Henry Filters, Inc., Bowling Green, Ohio

4,208,240, Reexam. No. 90/000,362, Requested: Apr. 4, 1983, Cl. 156/627, METHOD AND APPARATUS FOR CONTROLLING PLASMA ETCHING, Thomas S. Latos, Owner of Record: *Gould, Inc., Rolling Meadows, Ill.,* Attorney or Agent: Charles E. Snee, III, Ex. Gp.: 161, Requester: LFE Corp., Clinton, Mass.

4,186,073, Reexam. No. 90/000,368, Requested: Apr. 29, 1983, Cl. 206/380, PACKAGE FOR SEWING MACHINE NEEDLES OR THE LIKE, Cesare Paganoni, Owner of Record: *Nederlandse Naaldenfabriek Muva B.V., Jos Vaals, Netherlands,* Attorney or Agent: Martin A. Farber, Ex. Gp.: 241, Requester: Owner of Record

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Department of the Treasury
United States Customs Service

Recordation of Trade Name: Combe Incorporated
(T.D. 83-86)

Recordation of Trade Name: Combe Incorporated

Agency: U.S. Customs Service, Treasury

Action: Notice of Recordation

Summary: On Nov. 23, 1982, a notice of application for the recordation under section 42 of the Act of July 5, 1946, as amended (15 U.S.C. 1124), of the trade name "COMBE INCORPORATED" was published in the Federal Register (47 FR 52843). The notice advised that before final action on the application, consideration

would be given to relevant data, views, or arguments submitted in opposition to the recordation and received not later than Jan. 24, 1983. No responses were received in opposition to the application.

Accordingly, as provided in section 133.14, Customs Regulations (19 CFR 133.14), the name "COMBE INCORPORATED" is recorded as the trade name used by Combe Incorporated, a corporation organized under the laws of the State of Delaware, located at 1101 Westchester Ave., White Plains, N.Y. 10604. The trade name is used in connection with the following merchandise manufactured in several foreign countries: hair coloring; toiletries; cosmetics; odor-destroying insoles; odor-destroying hosiery; denture adhesives; pharmaceutical creams, ointments and lotions; veterinary medications and shampoos; and hair care products. Various foreign subsidiaries are authorized to use the trade name.

Date: (Date of Federal Register publication)

For Further Information Contact:

Harriet Lane, Entry, Licensing and Restricted Merchandise Branch, U.S. Customs Service, 1301 Constitution Ave., NW., Washington, D.C. 20229 (202-566-5765).

A. PIAZZA,
Apr. 11, 1983. *Acting Director, Entry Procedures and Penalties Division.*

National Technical Information Service

U.S. GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by agencies of the U.S. Government and are available for licensing in the U.S. in accordance with 35 U.S.C. 207 to achieve expeditious commercialization of results of federally funded research and development. Foreign patents are filed on selected inventions to extend market coverage for U.S. companies and may also be available for licensing.

Technical and licensing information on specific inventions may be obtained by writing to:

Office of Government Inventions and Patents
U.S. Department of Commerce
P.O. Box 1423
Springfield, Va. 22151

Please cite the number and title of inventions of interest.

GEORGE KUDRAVETZ,
Program Manager,
Office of Government Inventions and Patents
National Technical Information Service
U.S. Department of Commerce.

DEPARTMENT OF AGRICULTURE

SN 6–034,877 (4,376,211). TRIS(N-CARBALKOXY-LAMINOMETHYL)-PHOSPHINE OXIDES AND SULFIDES.

SN 6–223,509 (4,377,686). METHOD OF PURIFYING FATTY ACID ESTER PRODUCTS.

SN 6–272,842 (4,376,633). ZWITTERION COMPOUNDS AS CATALYSTS IN EASY-CARE FINISHING.

DEPARTMENT OF THE ARMY

SN 6–213,436 (4,378,559). RADAR ANTENNA SYSTEM.

DEPARTMENT OF HEALTH AND HUMAN SERVICES

SN 6–250,269 (4,377,958). REMOTELY OPERATED MICROTOME.

SN 6–350,221 (4,368,326). SHORT TOTAL SYNTHESIS OF DIHYDROTHEBAINONE, DIHYDROCODEINONE, AND NORDIHYDROCCODEINONE.

DEPARTMENT OF THE INTERIOR

SN 6–152,212 (4,377,726). SELECTIVE PAGING AND INTERCOMMUNICATION SYSTEM.

SN 6–156,131 (4,377,410). CHROMIUM RECOVERY FROM SUPERALLOY SCRAP BY SELECTIVE CHLORINE LEACHING.

SN 6–219,704 (4,367,950). COMBINED AEROSOL MONITOR AND CALIBRATEABLE LIGHT RAY SCATTERING REFERENCE ROD.

SN 6–229,698 (4,377,209). THERMALLY ACTIVATED METAL HYDRIDE SENSOR/ACTUATOR.

NATIONAL SECURITY AGENCY

SN 6–276,143 (4,375,626). PRECISE LINEAR TUNING CIRCUIT.

TENNESSEE VALLEY AUTHORITY

SN 6–021,879 (4,375,980). PRODUCTION OF SUSPENSION FERTILIZERS FROM ORTHO-PHORPHORIC ACID.

Renewal Applications and Section 8 Affidavits

There has been a noticeable increase in the number of petitions requesting provisional acceptance of defectively executed Section 8 Affidavits and Renewal Applications under 35 U.S.C. §26, the most common problem being a lack of notarization or a Rule 2.20 declaration. Often, such petitions are necessitated by the failure of registration owners to file the documents early enough to leave time in which to correshould they prove defective.

Section 8 Affidavits may be filed beginning with the fifth anniversary of the registration. The period for filing expires on the sixth anniversary of the registration. The period for filing Renewal Applications begins six months before the twentieth anniversary of the registration and extends three months beyond the expiration of the twenty year term. While the Post Registration Division may allow up to six months to respond to a notice of defect, it may not allow corrective action beyond the period for filing established by the Trademark Act. It is therefore in the registrant's best interest to file such documents as close to the opening date as possible to allow time for correction, if necessary. Provisional acceptance under 35 U.S.C. §26 has been, and will continue to be, given narrow application. Registrants should not rely on 35 U.S.C. §26 as a means of acquiring an extension of time.

We have also become aware of many delays caused by defects in the chain of title. Registrants are encouraged to keep Patent and Trademark Office assignment records current with regard to ownership of registrations.

The filing of Post Registration documents at the earliest date and maintenance of assignment records will help to avoid the cancellation or expiration of registrations of trademarks currently in use, and will result in a savings of time and expense for both the registrant and the Patent and Trademark Office.

MARGARET M. LAURENCE,
Apr. 19, 1983. *Assistant Commissioner for Trademarks.*

Current Directory
Trademark Examining Operation

Introduction

The Trademark Examining Operation has recently expanded its offices to include the fourth floor of Crystal Plaza Bldg. 2. Law Offices VII and VIII, and the Trademark Services Division are now located on that floor. Trademark applications being examined in Law Offices VII and VIII may be obtained from clerical personnel in those offices.

A current directory of examining attorneys and the Trademark Services Division is set forth below. All correspondence and inquires pertaining to a trademark application should identify the current law office and the examining attorney handling the application.

Directory — Trademark Examining Attorneys

Tel. 557-3273
Law Office I Room CP2-3C28
Charles Condro, Managing Attorney
Joseph Webb, Lead Attorney
Arnette McGill, Secretary

Catalano, Steven
Conn, William
Coyle, Mary
Drost, Albin
Mack, Mary
Matthews, Amos
Reihner, David
Richards, Susan
Rupp, Teresa
Rynkiewicz, John
Walsh, James
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Tel. 557-3277
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Doshie Day, Secretary

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Judge, Connie
Lamone, Thomas
McMahon, Marilyn
Solomon, Barry
Stine, David
Szoke, Michael
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Crowe, Robert
Fisher, Hannah
Foster, Steven
Frazier, Avis
Gertler, Jeffrey
Herdman, David
Krehely, Kimberly
Marsh, Sharon
Mayerschoff, Glynn
Nelson, Edward
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Tassan, Bruce

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Ravonne Lee, Secretary

Bellus, Stewart
Bucher, David
Cohn, Debbie
Clark, Robert
Davis, Wilbur
Gast, Paul
Gilbert, Craig
Gorowitz, Francie
Kester, Willa
Maltz, Janis
Morris, Craig
Peverada, Robert
Rask, Pamela
Wachspress, Eric

Tel. 557-2937
Law Office VI Room CP2-3C27
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Robert Feeley, Lead Attorney
Christopher Sidoti, Lead Attorney
Myrtle Robinson, Secretary

Grossman, James
Hannon, Mary
Hebert, Nancy
Herman, Russ
Johnson, James
Kolakoski, Richard
Marks, Martin
Rivera, Maria Holleran
Sparrow, Mary
Taylor, Craig
Walters, Carlisle
Williams, Ronald

Tel. 557-5237
Law Office VII Room CP2-4C13
E. Peter Harab, Managing Attorney
David Shallant, Lead Attorney
Shirley Jeffries, Secretary

Deaton, Cary
Dobyns, Tom
Hannah, Judith
Krame, Evan
Mandir, Frederick
Meyers, Fred
Ricciuti, Janet
Shaffer, Gary
Slutter, Nancy
Washington, Bushrod
Wendel, Helen
White, Cynthia
Wiseman, Michelle

Tel. 557-5242
Law Office VIII Room CP2-4C14
Sidney Moskowitz, Managing Attorney
Michael Bodson, Lead Attorney
Nakita Dates, Secretary

Abate, Candice
Bauman, Larry
Cole, Richard
Ervin, Joseph
Flom, Richard
Greenburg, Scott

Heller, Susan
Hooks, Arnold
Kaufman, Lisa
Keller, Stephen
Land, Ernest
McShane, Michelle
Sachs, Abram

Trademark Services Division Doreane I. Poteat, Director Beverly Hilliard, Secretary	Tel. 555-5249 Room CP2-4D23,
Classification Team Edward Hayes, Team Leader	Tel. 557-5255 Room CP2-4C28,
Ike and Assembly Team Portia Taylor, Supervisor	Tel. 557-5253 Room CP2-4D29
Publication and Issue Team Donald Perritt, Supervisor	Tel. 557-5247 Room CP2-4C23
Post-Registration Team Catherine Hill, Supervisor	Tel. 557-1986 Room CP2-4C24
Affidavit-Renewal Examiners	Tel. 557-1988 Room CP2-4C24
Search Room Leon Jackson, Supervisor	Tel. 557-3281 Room CP2-2C08

MARGARET M. LAURENCE,
Apr. 29, 1983. *Assistant Commissioner for Trademarks.*

Policy Regarding Exchange Agreements Under the Authority of 35 USC Section 6(a)

Background

The Patent and Trademark Office (PTO), by virtue of Section 6(a) of Title 35, United States Code, is empowered to enter into exchange agreements with other organizations to further the use of patent and trademark information, and to facilitate the use and availability of that information. In recognition of these objectives, the PTO establishes the following guidelines and principles which shall apply when evaluating and entering into exchange agreements with other public, private, domestic and foreign agencies, firms and companies.

Nature of Exchange Agreements

Exchange agreements by the PTO will generally be for the purpose of (1) acquiring goods and services which will assist the PTO in accomplishing its mission and achieving its goals; (2) reducing the cost to the government of processing activities associated with the examination of applications for patent and trademark registration; (3) fostering the dissemination of information contained in patent and trademark documents; and (4) furthering the general goal of automating patent and trademark examination processes.

In exchange agreements, the PTO and the industrial or commercial concerns will share in the cost and risks of the endeavor. Terms and conditions of each agreement, including the business arrangements, are negotiable within the limits of prevailing statutes and regulations and will be commensurate with the risks, involvement, and investment of the parties to the agreements. The PTO's intent is to offer as much latitude as practical in the agreement.

Each agreement will be negotiated on a case-by-case basis. Agreements will vary in size, complexity, scope and the nature of the materials, services, and/or products being exchanged by the parties. All exchange agreements will be subject to the availability of funds.

Incentives

Incentives provided by the PTO for the purpose of entering into exchange agreements may include, but are not limited to (1) providing copies of PTO documents; (2) providing computer processable data obtained from patents, trademark applications, trademark registrations, and other data sources developed by the PTO; (3) providing government furnished equipment necessary for the other party to fulfill the agreement; and (4) entering into joint programs where each party funds its own participation.

Considerations

The factors to be considered by the PTO prior to entering into an exchange agreement or providing incentives shall include, but will not be limited to the following considerations: (1) public or social need for the product(s) of the agreement; (2) enhanced dissemination of technological information; (3) benefits accruing to the public or the U.S. Government from the endeavor; (4) the desirability of private sector involvement in PTO programs; (5) the merit of the research, development or application proposed; (6) the degree of risk and financial participation by the other party; (7) the amount of proprietary data or other information to be furnished by the concern; (8) the rights in data to be granted to the PTO and the concern as a result of their contributions; (9) the willingness and ability of the concern to market and sell any resulting new or enhanced products on a reasonable basis; and (10) the impact of PTO sponsorship upon a given industry or area of commercial endeavor.

Administration

The Administrator for Automation is delegated the authority to enter into negotiations. The Commissioner of Patents and Trademarks will approve exchange agreements on behalf of the PTO. Before proceeding into comprehensive evaluation of a joint endeavor, a preliminary assessment will be made of the merits of the offer. Exchange agreement proposals which are too sketchy or ill-defined to (1) establish the merit in the basic idea, (2) establish that the proposal is in accordance with PTO program objectives, or (3) establish that the proposing organization is willing to make significant contribution to the endeavor, will not be evaluated in depth and will be treated as correspondence or advertising. This preliminary assessment will be conducted by the Administrator for Automation or his or her designee to determine if the proposal warrants further consideration. If this determination is positive and if the parties agree to proceed with a joint endeavor, the Administrator for Automation will enter into detailed discussions and negotiations with the offeror regarding the technical and business aspects of the offer. Upon reaching a mutually satisfactory arrangement, the agreement will be submitted to the Commissioner of Patents and Trademarks for approval. Administration of the exchange agreement program will be performed by the Administrator for Automation.

Due to resource limitations and the necessity for diversity in the program, only one offer will normally be accepted for a given PTO incentive. If substantially similar offers are received within any 45-day period, they will be evaluated and/or negotiated together. The offer which provides the best total consideration for the Government will be accepted. Special consideration shall be given to small and minority businesses, as appropriate.

GERALD J. MOSSINGHOFF,
May 3, 1983. *Commissioner of Patents and Trademarks.*

Errata

"All reference to Patent No. 4,365,879 to Yasuo Ishiguro of Japan for 'EXPOSURE CONTROLLING DEVICE ADAPTED TO CAMERAS USING INTERCHANGEABLE LENSES' appearing in the Official Gazette of Dec. 28, 1982 should be deleted since no patent was granted. "

"All reference to Patent No. 4,378,811 to Ronald Levitan of Transvaal, South Africa for 'SURGICAL

DEVICE' appearing in the Official Gazette of Apr. 5, 1983 should be deleted since no patent was granted."

"All reference to Patent No. 4,379,128 to Reinhard Hahn, et al. of Germany for 'PHOSPHOROUS-DOPED ALKALI TANTALUM DOUBLE FLUORIDES' appearing in the Official Gazette of Apr. 5, 1983 should be deleted since no patent was granted."

"All reference to Patent No. 4,379,456 to William D. Cornell of Missouri for 'LANCET INJECTOR' appearing in the Official Gazette of Apr. 12, 1983 should be deleted since no patent was granted."

Status of PTO Services

The following is an update of the status of PTO services as of Feb. 28, 1983:

Service Item	FY 1983 Peformance Goal	Actual	Comment
Filing Receipts:			
Patents	22	25	Reduced by 7 days in the past month.
Trademarks	30	87	Significant improvement is expected over next few months.
Patent Copies:			
Window Coupons	5	90% within 5 days	
Mail Coupons*	29	100% within 22 days	
Letter Orders*	34	100% within 15 days	
Certified Copies:			
Trademark Registrations	30	17	
Applications-As-Filed	20	96% within 10 days	
File-Wrapper/Contents	N/A	100% within 20 days	
Walk-up Certification	1	99% within 1 day	
Trademark Search Library:			
Filing Drawings	21	32	
Filing Reg. Certificates	3	2	
Assignments:			
Patents	25	23	Reduced by 9 days since last month.
Trademarks	25	30	
Patent Official Gazette:			
In Bookstore	Issue Date	On Schedule	
Mailed	Issue Date	Avg. 1 day late	
Patent Grants Mailed	Issue Date	Avg. 1 day late	
Patent Copies Available	Issue Date	99%	99% available by day after Issue Date.
Trademark Official Gazette:			
In Bookstore	Issue Date	On Schedule	
Mailed	Issue Date	On Schedule	
Trademark Regs. Mailed	Issue Date	On Schedule	

*Goal now includes mail processing and delivery time.

IMPROVEMENTS TO SERVICES

- *Patents Granted —Fiscal Year 1983* —The number of utility patents granted weekly for the issues of Feb. 22 through May 3, 1983, will average approximately 715 per week. The number will increase to about 1,000 in mid-May and to 1,330 by mid-Sept. These fluctuations are related to the adaptation of new examiners to their workloads. For fiscal year 1983, ending with the issue of Sept. 27, 1983, the Office plans to grant approximately 56,400 utility patents.
- *Photocopy Services* — TS Infosystems, Inc., the contractor for providing photocopying services, has instituted a new procedure for improving control of the CopiShare cards. New cards will be issued to users when they request additional dollars be added to current cards. At that time, TSI will document new card number, customer's name and Search Room badge number for audit trail and assistance in returning lost/found cards.
- *Microfilming Active Trademark and Patent File Histories* —We are currently finalizing a work statement to procure contractor services in support of this project. We expect to award this contract during Oct. 1983. By Dec. 1983, microfiche copies of new patent and trademark issues will be available to public search room users. We will also provide viewing and paper reproduction capabilities. During this summer, we will be providing sample microfiche and equipment for public search room users. At that time and through the initial phases of this project, we will closely monitor and evaluate film quality and equipment capabilities.
- *Disposal of Patented Files* —The Office is working with the National Archives to plan the disposal of patented application files which were issued during the period 1921–1946. Any suggestions pertaining to disposal of these files would be welcomed. You may write Wes Gewehr, CP-311C34, U.S. Patent and Trademark Office, Washington, D.C. 20231.

May 2, 1983.

THERESA A. BRELSFORD,
Assistant Commissioner for Administration.

PATENT NOTICES

Certificates of Correction for the Week of May 31, 1983

Re. 31,120	4,353,079	4,370,319	4,374,666
D.257,033	4,356,252	4,370,322	4,375,390
D.268,340	4,356,486	4,370,397	4,375,454
3,800,373	4,357,869	4,370,536	4,375,660
4,008,724	4,358,326	4,370,549	4,375,934
4,217,290	4,358,525	4,370,764	4,375,958
4,251,880	4,359,508	4,370,892	4,375,978
4,273,157	4,359,566	4,370,927	4,375,997
4,287,140	4,359,676	4,371,222	4,376,056
4,293,477	4,359,927	4,371,352	4,376,239
4,297,564	4,359,983	4,371,402	4,376,260
4,303,314	4,360,886	4,371,794	4,376,470
4,312,069	4,362,642	4,372,086	4,376,744
4,314,689	4,362,835	4,372,377	4,377,142
4,314,904	4,363,812	4,372,659	4,377,536
4,328,209	4,363,853	4,372,745	4,377,623
4,329,539	4,363,977	4,372,781	4,377,704
4,334,061	4,364,005	4,373,196	4,377,890
4,337,284	4,364,010	4,373,205	4,378,022
4,338,333	4,365,027	4,373,334	4,378,034
4,345,059	4,365,084	4,373,561	4,378,090
4,345,152	4,365,202	4,374,130	4,378,809
4,345,197	4,365,275	4,374,153	4,378,825
4,346,115	4,365,832	4,374,168	4,379,015
4,349,140	4,366,016	4,374,187	4,379,328
4,350,842	4,366,288	4,374,402	4,379,463
4,352,493	4,367,120	4,374,550	

Disclaimer

4,262,278. —*Donald W. Howard,* South Bend, *Dewey W. Eppley,* Nappanee, and *John E. Mackiewicz,* South Bend, Ind. DIAGNOSTIC BRAKE SYSTEM WARNING CIRCUIT. Patent dated Apr. 14, 1981. Disclaimer filed May 26, 1981, by the assignee, *The Bendix Corp.*

Hereby enters this disclaimer to claims 6, 7, 8, 10, 11, 12, 13, 14, 15 and 16 of said patent.

Dedications

3,232,898. —*William J. Van Loo, Jr.,* Middlesex, N.J., and *Jason M. Salsbury,* Stamford, Conn. PROCESS FOR RENDERING WATER-INSOLUBLE MELAMINE-FORMALDEHYDE RESINS WATER-SOLUBLE. Patent dated Feb. 1, 1966. Dedication filed Mar. 4, 1983, by the assignee, *American Cyanamid Co.*

Hereby dedicates the remaining term of said patent to the Public.

3,293,212. —*George Edward Power,* Cincinnati, Ohio and *Robert James Kassal,* Gainesville, Fla. THERMOSETTING REACTION PRODUCT OF HEXAKIS-(ALKOXYMETHYL) MELAMINES AND BISPHENOLS. Patent dated Dec. 20, 1966. Dedication filed Mar. 4, 1983, by the assignee, *American Cyanamid Co.*

Hereby dedicates the remaining term of said patent to the Public.

3,311,496. —*William Julius Van Loo, Jr.,* Middlesex, N.J. PROCESS FOR PRODUCING ROT AND WRINKLE RESISTANT CELLULOSE CONTAINING TEXTILE AND TEXTILE OBTAINED THEREWITH. Patent dated Mar. 28, 1967. Dedication filed Mar. 4, 1983, by the assignee, *American Cyanamid Co.*

Hereby dedicates the remaining term of said patent to the Public.

3,315,442. —*Lun Lee Yuan,* Wayne, N.J., and *George Kurose,* Norwalk, Conn. QUENCHING OF CRUDE MELAMINE GASES. Patent dated Apr. 25, 1967. Dedication filed Mar. 4, 1983, by the assignee, *American Cyanamid Co.*

Hereby dedicates the remaining term of said patent to the Public.

3,317,630. —*Ernest C. Yuille,* Plainfield, N.J. "ONE-KETTLE" PROCESS FOR PREPARING A COMPOSITION CONTAINING ALKYLATED MELAMINE AND UREA FORMALDEHYDE CONDENSATES. Patent dated May 2, 1967. Dedication filed Mar. 4, 1983, by the assignee, *American Cyanamid Co.*

Hereby dedicates the remaining term of said patent to the Public.

3,321,477. —*Daniel Hyman,* Greenwich, Conn., *Samuel William Tribit,* Hawthorne, N.Y., and *John Maurice Witheford,* Wyckoff, N.J. PURIFICATION OF MELAMINE. Patent dated May 23, 1967. Dedication filed Mar. 4, 1983, by the assignee, *American Cyanamid Co.*

Hereby dedicates the remaining term of said patent to the Public.

3,323,939. —*William Julius Van Loo, Jr.,* Middlesex, N.J. PROCESS FOR IMPARTING ROT AND WRINKLE RESISTANT FINISH TO A CELLULOSIC TEXTILE MATERIAL AND THE RESULTING TEXTILE. Patent dated June 6, 1967. Dedication filed Mar. 4, 1983, by the assignee, *American Cyanamid Co.*

Hereby dedicates the remaining term of said patent to the Public.

3,329,637. —*Emil Alfred Vitalis,* Stamford, Conn. WASHING AND PROTECTIVE FILM-FORMING COMPOSITION. Patent dated July 4, 1967. Dedication filed Mar. 4, 1983, by the assignee, *American Cyanamid Co.*

Hereby dedicates the remaining term of said patent to the Public.

3,377,349. —*Samuel William Tribit,* Hawthorne, N.Y. PREPARATION OF MELAMINE. Patent dated Apr. 9, 1968. Dedication filed Mar. 4, 1983, by the assignee, *American Cyanamid Co.*

Hereby dedicates the remaining term of said patent to the Public.

3,377,350. —*Eugene Kerr Watson,* Font Hill, Ontario, Canada and *John Maurice Witheford,* Tokyo, Japan. MELAMINE PRODUCTION. Patent dated Apr. 9, 1968. Dedication filed Mar. 4, 1983, by the assignee, *American Cyanamid Co.*

Hereby dedicates the remaining term of said patent to the Public.

3,407,155. —*George Sims Casebolt,* Cheshire, Conn. AMINOTRIAZINE DECORATIVE, DIMENSIONALLY STABLE MOLDING COMPOUND CONTAINING A POLYMERIZED AROMATIC MONOMER AND HYDROXYL-CONTAINING VINYL MONOMERS COPOLYMER. Patent dated Oct. 22, 1968. Dedication filed Mar. 4, 1983, by the assignee, *American Cyanamid Co.*

Hereby dedicates the remaining term of said patent to the Public.

3,438,916. —*Arnold Rogers Davis,* Berkeley Heights, N.J. USE OF CHLORINATED MELAMINES IN CURING OF POLYURETHANES. Patent dated Apr. 15, 1969. Dedication filed Mar. 4, 1983, by the assignee, *American Cyanamid Co.*

Hereby dedicates the remaining term of said patent to the Public.

3,451,955. —*Jerry Norman Koral,* Stamford, and *John Christos Petropoulos,* Norwalk, Conn. COATING COMPOSITION COMPRISING A BLEND OF THE REACTION PRODUCT OF A HIGHLY METHYLATED HEXAMETHYLOL MELAMINE WITH A FREE HYDROXYL GROUP CONTAINING COPOLYMER BLENDED WITH A GLYCERIDE OIL MODIFIED ALKYD RESIN OR CERTAIN ACRYLIC TERPOLYMERS. Patent dated June 24, 1969. Dedication filed Mar. 4, 1983, by the assignee, *American Cyanamid Co.*

Hereby dedicates the remaining term of said patent to the Public.

3,471,388. —*Jerry Norman Koral,* Stamford, Conn. ELECTRODEPOSITION OF AQUEOUS COATINGS CONTAINING ETHERIFIED METHYLOLATED MELAMINE. Patent dated Oct. 7, 1969. Dedication filed Mar. 4, 1983, by the assignee, *American Cyanamid Co.*

Hereby dedicates the remaining term of said patent to the Public.

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	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
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	St. Louis Public Library	(314) 241-2288 Ext. 214, Ext. 215
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New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
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North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
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	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
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Texas	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF April 2, 1983

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-16-81
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	11-20-81
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	3-1-82
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	3-09-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-12-82
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	5-22-81
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	3-30-81
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	1-05-81
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	5-12-81
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	8-25-80
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	1-30-81
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	5-18-81
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—STEPHEN G. KUNIN, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	7-27-81
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	8-27-82
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	11-17-80
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	9-17-80

Expiration of patents: The patents within the range of numbers indicated below expire during April 1983, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,243,822 to 3,248,737, inclusive

Plant Patents ..... Numbers 2,616 to 2,627 inclusive

REEXAMINATIONS

MAY 31, 1983

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

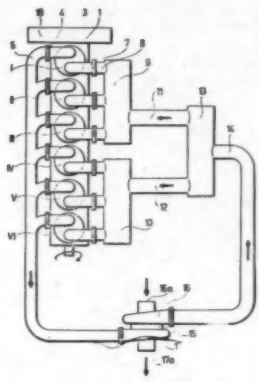
B1 3,796,048 (88th)

TURBOCHARGED INTERNAL COMBUSTION ENGINE WITH RESONANCE INDUCTION PIPE SYSTEM

Imre Annus; Gyula Cser; Sandor Florian; Gyorgy Horvath; Ferenc Kocsis, all of Budapest; Hungary, assignors to Autoipai Kutato Intezet, Budapest; Csepel Autogyar, Szigethalom, both of Hungary; part interest to each gethalom, both of Hungary; part interest to each

Reexamination Request No. 90/000,223, Jun. 30, 1982.
Reexamination Certificate for Patent No. 3,796,048, issued Mar. 12, 1974, Ser. No. 292,532, Sep. 27, 1972.
Claim priority, application Austria, Sep. 28, 1971, 8374/71

U.S. Cl. 60/605 **Int. Cl.[3] F02B** *37/04*



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1** and **4** are disclaimed.

Claim **2** having been finally determined to be unpatentable, is cancelled.

Claim **3** is determined to be patentable as amended:

New claim **5** is added and determined to be patentable.

5. A supercharged internal combustion engine comprising a plurality of working chambers having at least one group of at least one working chamber and at most four working chambers per group, at least one exhaust-turbo supercharger connected to receive and be driven in use by the exhaust gases from said working chambers, means for controlling the operating sequence of the same chambers to time the suction strokes to the said chambers within a multichamber group to take place without substantial overlap, inlet means in each said chamber, and a resonance induction pipe system connecting the said inlet means to tne delivery side of said supercharger, said pipe systen, comprising a receiver between said supercharger and said inlet means, a resonance vessel between said receiver and said inlet means, a resonance pipe between said vessel and said receiver, and a pipe between said inlet means and said vessel, said pipe having a length in meters no greater than 1,500 divided by the rated r.p.m. of the engine.

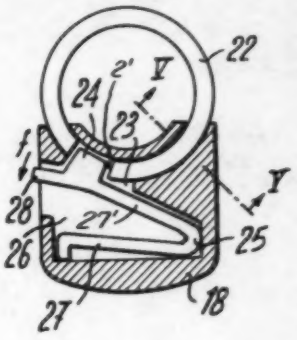
B1 4,129,021 (89th)

CLOSURE DEVICE

Attilio Brentini, "Le Château", Crissier, Vaud, Switzerland, CH-1023

Reexamination Request No. 90/000,035, Jul. 27, 1981.
Reexamination Certificate for Patent No. 4,129,021, issued Dec. 12, 1978, Ser. No. 802,805, Jun. 2, 1977.
Claims priority, application Switzerland, Aug. 30, 1976, 10948/76

U.S. Cl. 70/456 R **Int. Cl.[3] A44B** *15/00*



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–4**, having been finally determined to be unpatentable, are cancelled.

Claims **5** and **6**, are determined to be patentable as amended:

New claim **7** is added and determined to be patentable.

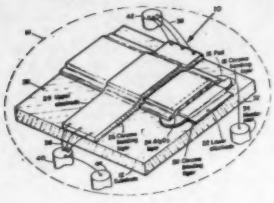
7. A closure device including a two-part body defining an arcuate passage extending therethrough and opening through the upper portion of said body, said body having an internal cavity therein below said arcuate passage, said body including a side opening communicating with said cavity, said arcuate passage provided with a lateral opening extending downwardly and communicating with said cavity, a ring having a portion of its body disposed within said arcuate passage and a substantial portion of its body projecting upwardly from said body to permit rotary displacement of said ring about its own axis of rotation, said ring having an opening, a retainer part of resilient material disposed within said cavity and pressing against one wall of said cavity, said retainer part being generally V-shaped and having two limbs joined by a connecting portion, one said limb pressing against one said cavity wall and the other said limb including a laterally projecting locking element biased into said arcuate passage lateral opening and locking said ring when urged into said ring opening, a free actuating end on said other limb disposed through said body side opening and operable exteriorly of said body, said locking element disposed on said other limb between said free actuating end and said connecting portion, and said arcuate passage, internal cavity, lateral opening and side opening formed in juxtaposed sandwiched portions of said parts of said body whereby, manipulation of said free actuating end causes displacement of said locking element from within said ring opening.

B1 4,288,775 (90th)

DEVICE AND METHOD OF MANUFACTURING A RELATIVE HUMIDITY SENSOR AND TEMPERATURE SENSOR

Paul F. Bennewitz; Matt C. Bennewitz, both of 623 Wyoming, SE., Albuquerque, N. Mex. 87123.

Reexamination Request No. 90/000,208, Jun. 1, 1982.
Reexamination Certificate for Patent No. 4,288,775, issued Sep. 8, 1981, Ser. No. 92,766, Nov. 9, 1979.
U.S. Cl. 338/35 Int. Cl.³ H01L 7/00



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1** and **6** are determined to be patentable as amended:

Claims **2-5**, dependent on an amended claim, are determined to be patentable.

1. A semiconductor for use as a sensor for detecting relative humidity *which does not exhibit progressive aging* comprising:

a lower electrode formed from a noble metal;

an essentially pure layer of Al_2O_3 having a thickness ranging from approximately 120 angstroms to 5000 angstroms deposited on said lower electrode, said layer of Al_2O_3 having a disordered crystalline structure *without pores* and a density gradient which varies progressively through the thickness of said layer of Al_2O_3 from a less dense structure at the lower surface of said layer of Al_2O_3 adjacent said lower electrode to a more dense structure at the upper surface of said layer of Al_2O_3;

an upper electrode deposited on said upper surface of said layer of Al_2O_3, said upper electrode having a thickness ranging from approximately 7 Å to approximately 1000 Å;

whereby said disordered crystalline structure and said density gradient of said layer of Al_2O_3 function to produce a linear response to relative humidity from said sensor.

REISSUES

MAY 31, 1983

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

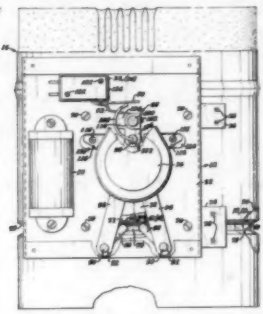
Re. 31,256
AUTOMATIC DAMPER MEANS AND CONTROLS THEREFOR

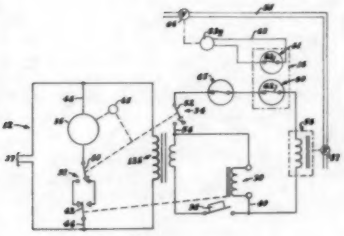
Robert H. Schmidt, 9620 Copley Dr., Indianapolis, Ind. 46290

Original No. 4,254,759, dated Mar. 10, 1981, Ser. No. 870,479, Jan. 18, 1978. Application for reissue Mar. 12, 1982, Ser. No. 357,833

Int. Cl.³ F23J *11/00*; F23L *1/00*; F23N *5/10*

U.S. Cl. 126—307 A **16 Claims**





1. Damper control means for a damper means of a flue duct, which is provided with support means which support the damper means in the associated duct-work in and between a duct-open and a duct-closing position, comprising, in combination:

crank means operatively connected to the support means;

link means for rotating the crank means;

movable first control means for moving the link means to rotate the crank means;

drive means for moving the movable control means for rotating the crank means; and

actuation control means for actuating the said drive means, and operative in response to an associated thermostat means and to the previous movement of the drive means to actuate the drive means so as to cause and permit only movement thereof sufficient to rotate the crank means between the duct-closing and duct-open positions of the damper means.

Re. 31,257
ADJUSTABLE GUIDE VANES FOR AN AXIAL FLOW ROTARY SEPARATOR

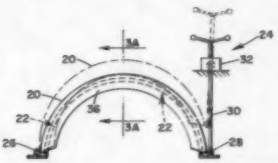
Fritz Glaser, Zweibrücken; Christoph Gortz, Mutterstadt; Kurt K. Bühler; Josef W. Klimmer, both of Zweibrücken; Rene Laberheim, Volmünster; Klaus H. Pauli, Homburg, and Werner Velten, Contwig, all of Fed. Rep. of Germany, assignors to Deere & Company, Moline, Ill.

Original No. 4,258,726, dated Mar. 31, 1981, Ser. No. 55,093, Jul. 5, 1979. Application for reissue Aug. 27, 1981, Ser. No. 296,618

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1978, 2830104

Int. Cl.³ A01F *12/28*

U.S. Cl. 130—27 L **10 Claims**



1. In an axial flow rotary separator for a combine, including a housing and a rotor rotatably mounted within [and concentric with] the housing and carrying on its surface a plurality of material-treating and controlling elements, the housing being generally cylindrical in form and having a generally cylindrical wall with an upstream inlet end and a downstream outlet end, rotor and housing cooperating as the rotor rotates to process crop material introduced to the housing at the upstream end while transferring it to the downstream end, an improved means for controlling the axial progress of the crop material through the housing comprising:

a plurality of spaced apart elongated guide bars, each bar being raised generally radially inwards from the housing wall and being disposed generally helically so as to engage crop material being propelled circumferentially by the rotor [within the annular space], the helical disposition being such that relative movement between the material and the guide bar deflects the material axially towards the outlet end of the housing, each guide bar including with respect to crop material circumferential movement a leading portion and a trailing portion, the leading portion being [substantially] fixed in positional relationship to the housing [and carried by the housing] and the trailing portion being operatively associated with and essentially [continuing] *extending* the leading portion and selectively adjustable with respect to *and independently of* the leading portion so as to vary the effectiveness of the guide bar in deflecting crop material axially.

Re. 31,258
FLUID VELOCITY EQUALIZING APPARATUS

Kenneth W. De Baun, Santa Rosa, Calif., assignor to Air Monitor Corporation, Santa Rosa, Calif.

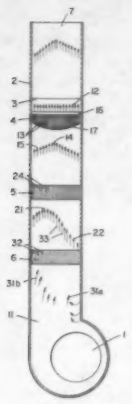
Original No. 3,964,519, dated Jun. 22, 1976, Ser. No. 524,740, Nov. 18, 1974. Application for reissue Oct. 19, 1978, Ser. No. 952,695

Int. Cl.³ F15D *1/02*

U.S. Cl. 138—37 **2 Claims**

9. Apparatus for equalizing the velocity of flowing fluid including duct means defining a flowing stream of fluid; at least

one open-ended honeycomb equalizing section substantially coaxial with said duct means, intercepting and conducting the fluid therethrough, said honeycomb section having a plurality of parallel passages across substantially the entire duct cross-



section wherein the ratio of surface area of each passage to the cross-sectional area of each passage is at least 30 and the end of the honeycomb facing the stream of fluid is curved to flatten the velocity profile of the stream.

Re. 31,259

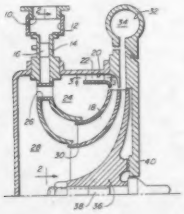
TWO-STAGE TURBO COMPRESSOR

Sankaraiyer Gopalakrishnan, Brea, Calif., and William L. Kuivinen, Mount Prospect, Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

Original No. 4,231,702, dated Nov. 4, 1980, Ser. No. 69,424, Aug. 24, 1979. Application for reissue Sep. 18, 1981, Ser. No. 303,647

Int. Cl.³ F01D *1/12*

U.S. Cl. 415—56 **3 Claims**



7. In a two stage rotary compressor having first and second stage centrifugal impellers connected to a rotatable shaft, an inlet to each impeller stage and an outlet from each impeller stage and with the inlet to the second stage being connected to the outlet of the first stage and with the outlets from each stage being located at the same radial distance from the shaft, the inlet to the second stage impeller being located radially inwardly of the inlet to the first stage impeller, the improvement comprising: a plurality of fixed de-swirl vanes in the outlet of the first stage impeller; adjustable inlet guide vanes in said inlet to the first stage impeller; and cross over passages in said inlet to the first stage impeller forming said connections between the outlet of the first stage impeller and the inlet to the second stage impeller.

Re. 31,260

PROCESS FOR THE PREPARATION OF AN ACETONITRILE DERIVATIVE

Michel Chignac, Sisteron; Claude Grain, Volonne, and Charles Pigerol, Saint-Ouen, all of France, assignors to Labaz, Paris, France

Original No. 4,155,929, dated May 22, 1979, Ser. No. 904,461, May 10, 1978. Continuation of Ser. No. 800,346, May 25, 1977, abandoned. Application for reissue Jun. 27, 1980, Ser. No. 163,702

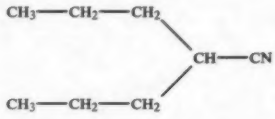
Claims priority, application France, Mar. 15, 1977, 77 07587

The portion of the term of this patent subsequent to Nov. 28, 1995, has been disclaimed.

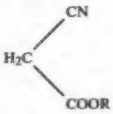
Int. Cl.³ C07C *120/00, 121/16*

U.S. Cl. 260—465.1 **9 Claims**

1. Process for the preparation of di-n-propylacetonitrile of the formula:



whereby, (a) sodium n-propylate in n-propanol medium is added to a reaction medium which is formed of a cyanacetate of general formula:



in which R represents an alkyl radical having from 1 to 4 carbon atoms, and n-propyl bromide or iodide, the alkylation reaction taking place under reflux at atmospheric pressure, (b) the crude ester obtained is saponified at a temperature between 30° and 70° C. with a 10 to 20% by weight solution of sodium hydroxide or potassium hydroxide in the proportion of 1.25 to 2 mols of sodium or potassium hydroxide per mol of crude ester, the resulting salt is acidified with a strong acid at a temperature not exceeding 40° C., to give crude di-n-propyl cyanacetic acid, (c) which is decarboxylated solely by heating, in the absence of any supplementary agent, at a temperature between 140° C. and 190° C., so as to obtain the di-n-propylacetonitrile.

Re. 31,261

2,2,6,6-TETRASUBSTITUTED-4-PIPERIDYL CARBOXY HETEROCYCLIC COMPOUNDS AS STABILIZERS FOR SYNTHETIC POLYMERS

Motonobu Minagawa, Kosigaya; Naohiro Kubota, Urawa, and Toshihiro Shibata, Tsuji Urawa, all of Japan, assignors to Adeka Argus Chemical Co., Ltd., Urawa, Japan

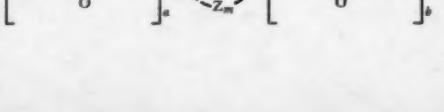
Original No. 4,118,369, dated Oct. 3, 1978, Ser. No. 709,561, Jul. 28, 1976. Application for reissue Nov. 27, 1981, Ser. No. 325,392

Int. Cl.³ C08K *5/34*; C07D *401/00, 251/00*

U.S. Cl. 524—100 **31 Claims**

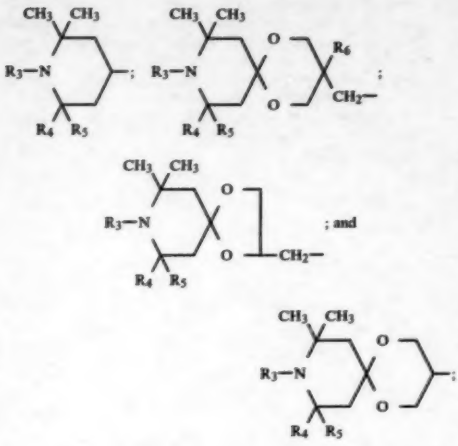
1. A 2,2,6,6-tetrasubstituted-4-piperidyl carboxy heterocyclic compound having the general formula:

I

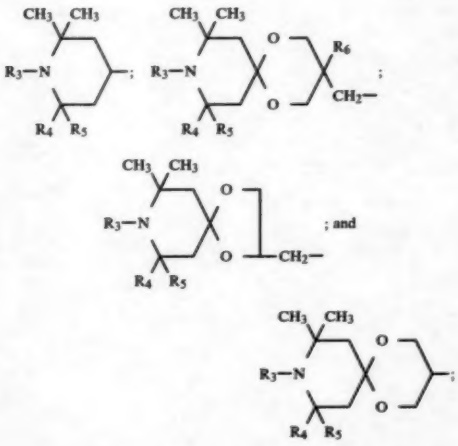


wherein:

R_1 is selected from the group consisting of

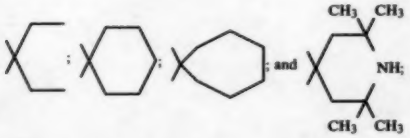


R_2 is selected from the group consisting of hydrogen; alkyl; alkenyl; alkynyl; aralkyl; aryl;



R_3 is selected from the group consisting of hydrogen; oxo; halogen; alkyl; alkenyl; alkynyl; aralkyl and aryl;

R_4 and R_5 are selected from the group consisting of alkyl and R_4 and R_5 taken together to form



R_6 is lower alkyl;

a is selected from the group consisting of 1, 2 and 3;

b is selected from the group consisting of 0, 1 and 2;

Z represents a heterocyclic ring having from three to six ring atoms of which one to [three aee] *two are* nitrogen, any remaining ring atoms being carbon atoms;

m is selected from the group consisting of 1, 2 and 3;

Y_1 and Y_2 are bivalent linking groups selected from the group consisting of alkylene and alkyleneoxyarylene, the alkylene having from one to four carbon atoms; and

n_1 and n_2 are 0 or 1.

Re. 31,262

POLYCARBONATE TRANSESTERIFICATION

Daniel J. Brunelle, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Original No. 4,310,656, dated Jan. 12, 1982, Ser. No. 134,705, Mar. 27, 1980. Application for reissue Mar. 1, 1982, Ser. No. 353,686

Int. Cl.³ C08G *63/62*

U.S. Cl. 528—200 **10 Claims**

1. A polycarbonate transesterification process comprising reacting mixtures of bis(ortho-haloaryl)carbonate/orthohaloaryl arylcarbonate and a dihydric phenol under transesterification reaction conditions.

Re. 31,263

AMPLIFIER CIRCUITS

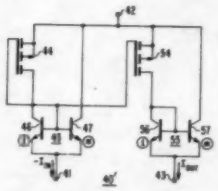
Otto H. Schade, Jr., North Caldwell, N.J., assignor to RCA Corporation, New York, N.Y.

Original No. 4,092,612, dated May 30, 1978, Ser. No. 796,341, May 12, 1977. Continuation of Ser. No. 644,821, Dec. 29, 1975, abandoned. Application for reissue May 27, 1980, Ser. No. 153,630

Claims priority, application United Kingdom, Feb. 24, 1975, 07659/75

Int. Cl.³ H03F *3/04*

U.S. Cl. 330—288 **30 Claims**



19. A current amplifier comprising:

input, output, and common terminals;

first and second transistors of a first conductivity type, each having respective output and common electrodes defining the ends of its principal current conduction path and having a respective input electrode, their common electrodes being connected to said common terminal, their input electrodes having an interconnection therebetween, the output electrodes of said first and second transistors connecting respectively to a first circuit node and to a second circuit node, and their conduction characteristics being proportionally related so their output electrodes are conditioned to conduct proportionally related currents owing to the foreclaimed connections of their common and input electrodes applying substantially equal potentials between the common and input electrodes of each of them;

means for applying current received at said input terminal to said first circuit node;

means, connecting to said first circuit node and to said interconnection between the input electrodes of said first and second transistors, for completing a direct-coupled output-electrode to input-electrode feedback connection for said first transistor;

third and fourth transistors of a second conductivity type complementary to said first conductivity type, each having respective output and common electrodes defining the ends of its

principal current conduction path and having a respective input electrode, their common electrodes being connected to said output terminal, their input electrodes having an interconnection therebetween, and their conduction characteristics being proportionally related so their output electrodes are conditioned to conduct proportionately related currents owing to the foreclaimed connections of their common and input electrodes applying substantially equal potentials between the common and input electrodes of each of them, the output electrodes of said third and fourth transistors connecting respectively to said second circuit node and to said common terminal; and

means, connecting to said second circuit node and to said interconnection between the input electrodes of said third and fourth transistors, for completing a direct-coupled output-electrode to input-electrode feedback connection for said third transistor, said foreclaimed connections of said first, second, third, and fourth transistors facilitating the current gain of said current amplifier being a predetermined value independent of the variations of the individual conduction characteristics of those transistors.

PLANT PATENTS

GRANTED MAY 31, 1983

Illustrations for plant patents are usually in color and therefore it is not practicable to reprodace the drawing.

5,056

TABLE GRAPE

Harold P. Olmo, and Albert T. Koyama, both of Davis, Calif., assignors to Regents U.C., Berkeley, Calif.

Filed Jan. 28, 1980, Ser. No. 115,835

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—47 1 Claim

1. The new and distinct variety of table grape herein described and illustrated and identified by the characteristics enumerated above.

5,057

DISTINCT VARIETY OF GERANIUM NAMED GLACIER CRIMSON

Wilhelm Elsner, Dresden, German Democratic Rep., assignor to Oglevee Associates, Inc., Connellsville, Pa.

Filed Nov. 10, 1981, Ser. No. 320,084

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—68 1 Claim

1. A new and distinct variety of geranium plant substantially as herein shown and described.

PATENTS

GRANTED MAY 31, 1983

ERRATA

For CLASS	See PATENT NO.
604–031	4,385,630
604–284	4,385,631
604–360	4,385,632
604–164	4,385,633
384–114	4,385,787
523–210	4,386,027
525–068	4,386,176
377–081	4,386,282

PATENTS

GRANTED MAY 31, 1983

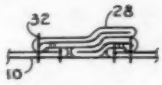
GENERAL AND MECHANICAL

4,385,403

GARMENT PLACKET AND METHOD OF FORMING

Donald Richardson, Atkinson, N.H., and Joop F. Hoekstra, Medfield, Mass., assignors to The Reece Corporation, Waltham, Mass.

Filed Apr. 6, 1981, Ser. No. 251,050
Int. Cl.³ A41D *27/00*
U.S. Cl. 2—96 **11 Claims**



1. A placket for a garment comprising,
an elongated opening extending inwardly from one edge of the material forming the garment,
the edges of the material adjacent said opening being folded back upon one face of the garment along the sides and the end of the opening to provide a finished rolled edge for the opening in the garment material,
an underfacing overlying the opening and secured to the garment material along one side of the opening and covering the folded back portion on the said one side of the opening, and
a placket facing overlying the underfacing and, secured to the garment material along the other side of the opening and covering the folded back portion on the said other side of the opening.

4. A method for forming a placket in a garment comprising the steps of
cutting a longitudinal slit in the garment material at the desired location inwardly from an edge of the garment so as to be open at one end and closed at the other end,
folding the edges of the slit back upon one face of the garment to provide an opening having finished edges,
securing an underfacing to one side of said openings in covering relationship to the raw folded back edge on the one side of said opening in the garment material, and with the underfacing presenting only folded finished longitudinal edges,
securing a placket facing to the other side of said opening in covering relationship to the raw folded back edge on the other side of said opening in the garment material, and with the underfacing presenting only folded finished longitudinal edges,
folding the end of said placket facing at the closed end of the slit under itself to present a finished edge, and
securing the said finished end to the garment material.

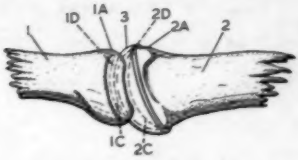
4,385,404

DEVICE AND METHOD FOR USE IN THE TREATMENT OF DAMAGED ARTICULAR SURFACES OF HUMAN JOINTS

Lance Sully, Sutton Bonnington, England, and Ian T. Jackson, Rochester, Minn., assignors to J. & P. Coats, Limited, Glasgow, Scotland

Filed Feb. 23, 1981, Ser. No. 236,976
Claims priority, application United Kingdom, Feb. 21, 1980, 8005826
Int. Cl.³ A61F *1/24*
U.S. Cl. 3—1.91 **3 Claims**

1. A method of repairing a human joint having damaged articular surfaces on the adjacent bone ends comprising separating the bone ends, removing enough of each bone end to expose a portion of the bone containing blood vessels, applying live perichondrial grafts taken from a bio-compatible donor over said exposed bone portions, applying a cap of concavo-convex lenticular form constructed of a bio-compatible flexible material between the grafts on the opposed bone ends such that the concave and convex surfaces will determine the contours of new opposed cartilaginous articular surfaces formed therealong and over the damaged surfaces, the concave and convex surfaces being such that no ingrowth of tissue takes place, bringing the bone ends against opposite sides of the cap, then



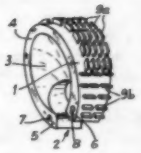
after enough time has elapsed to permit the grafts to become permanent new cartilaginous surfaces on the bone ends and to mold themselves to the shape of the concave and convex surfaces respectively of the cap, separating the bone ends and removing the cap so that said new cartilaginous surfaces can come together by elastic action of the tendons and ligaments associated with the joint.

4,385,405

HIP PROSTHESIS AND ITS METHOD OF FITTING

Pierre L. Teinturier, Champeaux, 63110 Beaumont, France

Filed Oct. 2, 1980, Ser. No. 193,316
Claims priority, application France, Oct. 3, 1979, 79 24589
Int. Cl.³ A61F *1/04*
U.S. Cl. 3—1.912 **5 Claims**



1. A hip prosthesis for replacing a hip joint by fitting a prothesis into a formed cylindrical bore cavity in the pelvis bone, said prothesis comprising:
a horseshoe shaped cotyloidal element (1) made of an elastically deformable material comprising a generally outer cylindrical surface, said cotyloidal element having a longitudinal axis and being delimited by two end faces, said end faces comprising a first end face being substantially perpendicular to the axis of the cylindrical surface, and a second end face being oblique with regard to said longitudinal axis, said end faces forming on the cylindrical surface a longer side and a shorter side, said oblique surface having formed therein a cavity in the form of a spherical cup, and said outer cylindrical surface being cut out on the shorter side to form an indentation (2) defining horns on respective sides of the cut out allowing the perimeter of the element to be reduced by drawing together the horns (5, 6) formed by the indentation;
whereby, the horseshoe shaped cotyloidal element may be deformed elastically in order to reduce its diameter to permit it to be engaged into the bore cavity, after which the cotyloidal element is released so as to take its initial

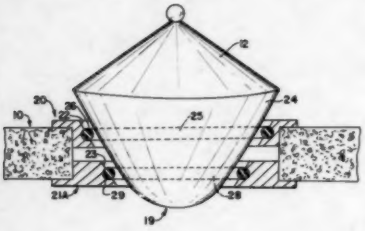
shape to elastically clamp said element into the bore cavity.

4,385,406

WATER CLOSET VALVE

Leonard A. Miskiewicz, 219 Sprucewood St., Pittsburgh, Pa. 15210

Filed Jul. 20, 1981, Ser. No. 285,367
Int. Cl.[3] E03D *1/34, 1/35*
U.S. Cl. 4—378 1 Claim



1. In a water closet valve, including a conical opening in a generally horizontal surface and a corresponding valve bulb which is wider than the opening and mounted for vertical movement above the said opening, the improvement comprising

at least two vertically spaced-apart circular sealing O-rings interposed between said valve bulb and said conical opening, said O-rings comprising resilient, corrosion-resistant, abrasion-resistant material, the said two sealing O-rings being secured to the said conical opening and engage the surface of the said valve bulb when the valve is in a closed position,

whereby said sealing O-ring provides a separate and distinct water seal between the said valve bulb and the said conical opening.

4,385,407

FLOATABLE POOL COVER

Kenneth W. Zook, 3339 Primera St., Hollywood, Calif. 90028

Filed Jun. 19, 1981, Ser. No. 275,589
Int. Cl.[3] E04H *3/16, 3/18*
U.S. Cl. 4—499 33 Claims

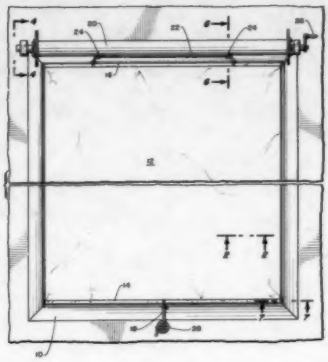
1. A swimming pool cover comprising:

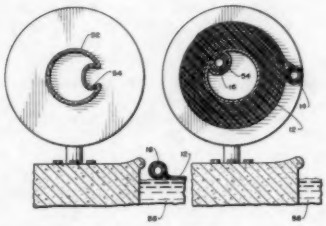
a generally rectangular flexible sheet having the shape of the pool to be covered;

a first substantially rigid floatable means attached to one edge of said flexible sheet and substantially the same length of said one edge of said flexible sheet;

a second substantially rigid floatable means attached to the edge of said flexible sheet generally opposite said one edge and substantially the same length as said opposite edge of said flexible sheet;

said flexible sheet and said first and second substantially rigid floatable means adapted and arranged to float on said pool





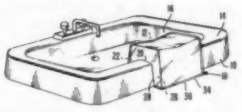
when said pool is covered and to be wound on a reel when the pool is to be uncovered.

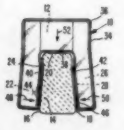
4,385,408

SANITARY CUSHIONING DEVICE FOR SINK BOWL EDGES

Joanne Rhodes, 817 Cybus Way, Southampton, Pa. 18966

Filed Oct. 17, 1980, Ser. No. 198,021
Int. Cl.[3] A47K *3/022, 3/12*
U.S. Cl. 4—523 9 Claims





1. A sanitary cushioning device for sink bowl edges comprising:

(a) a platform means adapted to extend horizontally over the upper edge of a standardly configured sink bowl edge, said platform means being of a flexible resilient material, said platform means including a lower platform surface adapted to abut the top edge of a sink bowl edge;

(b) a flexible first leg means fixedly secured with respect to one end of said platform means and extending downwardly therefrom to be positioned against the inner side of a sink bowl edge, said first leg means being of a flexible resilient material, said first leg means defining an inner first surface adapted to abut the inner portion of a sink bowl edge;

(c) a flexible second leg means fixedly secured with respect to the other end of said platform means and extending downwardly therefrom to be positioned against the other side of a sink bowl edge, said second leg means being of a flexible resilient material, said second leg means defining an inner second surface adapted to abut the outer portion of a sink bowl edge, said inner second surface being spatially disposed from said inner first surface at a distance less than the distance between an inner portion and an outer portion of a conventional sink bowl edge wherein said inner first surface is biased against the inner portion of a sink bowl edge and said inner second surface is biased against the outer portion of a sink bowl edge to detachably retain said cushioning device in place on said sink bowl edge, said inner first surface and said inner second surface and said lower platform surface defining a slot means therebetween adapted to detachably receive a sink bowl edge therein, said slot means defining the two open side areas therein, and

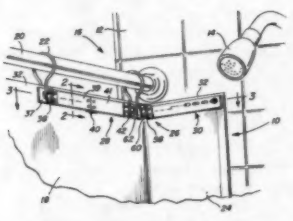
(d) a removable covering means being of a water resistant material and extending into said slot means between the sink bowl edge and said lower platform surface, said inner first surface and said inner second surface to prevent water in the sink from wetting the flexible resilient material of said platform means and said first and second leg means.

4,385,409

SHOWER CURTAIN BENDER

Robert H. File, P.O. Box 3006, Albuquerque, N. Mex. 87190, and Karen S. File, 995 Paulson Ct., Lafayette, Calif. 94549

Filed May 11, 1981, Ser. No. 262,792
Int. Cl.³ A47K 3/22
U.S. Cl. 4—608 **7 Claims**



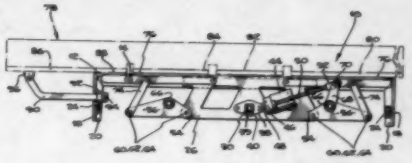
4. A shower curtain bender for holding a shower curtain and holding an end portion of said curtain adjacent an end wall of a shower enclosure comprising; a horizontal primary arm for juxtaposing against the inside surface of a shower curtain and having inner and outer sides, a horizontal secondary arm having one end pivotally connected to one end of said primary arm for angular displacement relative thereto about an axis inclined upwardly and outwardly relative to said primary arm, said secondary arm including means to mount said secondary arm to a corresponding end of a shower curtain, said primary arm including a plurality of horizontally transverse openings formed therethrough for support of said primary arm from shoulder hooks slidably supported from a shower curtain rod and from which a shower curtain also is supported.

4,385,410

ARTICULATED ADJUSTABLE BED HAVING A SINGLE MOTOR DRIVE

Franklin E. Elliott, Torrance, and Jaime Z. Estrada, Anaheim, both of Calif., assignors to Maxwell Products, Inc., Cerritos, Calif.

Filed Feb. 9, 1981, Ser. No. 232,658
Int. Cl.³ A61G 7/00
U.S. Cl. 5—67 **11 Claims**



1. In an adjustable bed having an adjustable frame that supports an articulated mattress including at least first, second and third sections adjusted by adjustment of said frame, the improvement comprising:

support sections forming the sides of said frame;

at least one lateral support member joining said support sections;

a single motor mounted within said frame upon said lateral support member;

said frame having a first adjustable section to support and adjust said first section of said articulated mattress and a second adjustable section to support and adjust said third section of said mattress, said second section thereof being mounted upon said frame;

said first and second adjustable sections pivotally mounted upon said adjustable frame;

mechanical drive means connecting said single motor to said first adjustable section of said frame for raising and lowering said first section;

linkage means connected from said first adjustable section to said lateral support member and then to said second adjustable section for raising and lowering said second adjustable section, including:

(a) a pivot converter mounted upon said lateral support member;

(b) a first push linkage means attached from said first adjustable section to said pivot converter; and

(c) a second pull linkage means attached from said pivot converter to said second adjustable section wherein the raising of said first adjustable section will push said first push linkage against said converter for pulling said second pull linkage against said second adjustable section for raising said second adjustable section.

4,385,411

ANGLE BROOM

Frank Clark, Girard, Pa., assignor to Tantera, Inc., Girard, Pa.

Filed May 12, 1981, Ser. No. 263,103
Int. Cl.³ A46B 9/00, 9/08
U.S. Cl. 15—160 **2 Claims**

1. A broom having a integral, one piece frame (11),

a handle (12) and straws (13),

said frame (11) comprising a handle receiving part (14),

a straw receiving part (15) and an intermediate part (16),

said handle receiving part (14) having a handle receiving opening (17) therein receiving an end of said handle (12),

said straw receiving part (15) having a lower side (18) disposed in a first plane,

the upper ends of said straws (13) being received in the said lower side (18) of said straw receiving part and attached thereto,

said straws (13) each terminating at their lower ends remote

from said handle in ends in a second plane (19) generally parallel to said first plane,

said handle having a longitudinal axis (20) disposed at an acute angle of approximately 10° to said second plane (19) which is approximately equal to the natural angle to a floor that a person holds a broom while sweeping,

said straw receiving part (15) having an upper side extending generally parallel to said lower side (18) of said straw receiving part,

said intermediate part being integrally fixed to said handle receiving part and to said lower straw receiving part and extending upwardly from the longitudinal axis at an angle of approximately 60° to the upper side of said lower straw receiving part,

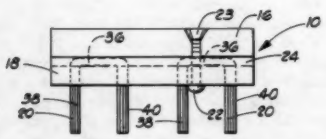
said upper side of said straw receiving part providing a convenient area for engaging a hanger for hanging said broom in an inverted position.

4,385,412

ATTACHMENT FOR REMOVING GLUED-ON CARPET PADDING

Emerson W. Neufeldt, 110 W. 2nd St., Buhler, Kans. 67522

Filed Jul. 22, 1981, Ser. No. 285,875
Int. Cl.³ A47L *13/02*
U.S. Cl. 15—236 C **4 Claims**



4. An attachment adapted for mounting on a conventional rotary floor surfacing machine or the like, the attachment used for removing carpet padding glued to the floor, the attachment comprising:

a circular top plate;

an adapter mounted on the top plate for releasably securing the attachment to the machine;

a circular bottom plate releasably mounted on the bottom of the top plate, the circular bottom plate having a plurality of radial grooves in the top thereof, the grooves having a plurality of parallel holes extending downwardly through the width of the bottom plate; and

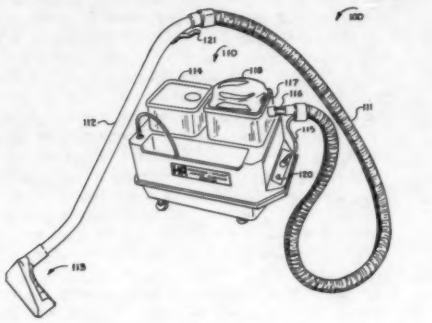
a plurality of u-shaped wire blades, each blade having a center portion integrally attached to two downwardly extending arms, the center portion of the blade received inside the groove in the bottom plate, the downwardly extending arms received through the holes in the groove and downwardly from the bottom of the bottom plate, the width of the arms of the blades are positioned so they are parallel to the direction of the travel of the machine so the edges of the arms engage the carpet padding.

4,385,413

CARPET CLEANING SYSTEM

Aaron Goldsmith, 21821 Burbank Blvd., Woodland Hills, Calif. 91367

Filed Jun. 24, 1980, Ser. No. 162,577
Int. Cl.³ A47L *7/00*
U.S. Cl. 15—322 **9 Claims**



1. A cleaning system comprising:

means for supplying a cleaning fluid;

a sonic vibrator for providing sonic vibrations;

a beater bar for cleaning a carpet, said beater bar including

a. a bar for beating a carpet and for agitating cleaning fluid in response to the sonic vibrations from said sonic vibrator and

b. a row of orifices distributed along said bar for dispensing agitated cleaning fluid supplied by said cleaning fluid supplying means in response to the sonic vibrations from said sonic vibrator;

a vacuum intake port for recovering cleaning fluid dispensed by said orifices;

means for mounting said vacuum intake port parallel with said bar and adjacent to each of said orifices distributed along said bar;

a seal for increasing cleaning fluid recovery; and

means for mounting said seal in between said bar and said vacuum intake port.

4,385,414

CASTER FOR ADJUSTABLE BEDS AND THE LIKE

Frank M. Damico, Hull, Wis., assignor to Joerns Furniture Company, Stevens Point, Wis.

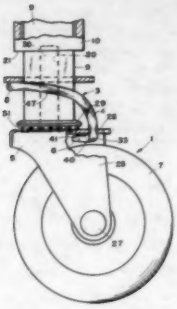
Filed Oct. 6, 1980, Ser. No. 194,383
Int. Cl.³ B60B *33/00*; B60T *1/04*
U.S. Cl. 16—35 R **25 Claims**

1. In a caster having a ground engaging wheel rotatably mounted in a housing and an upstanding spindle for connecting said caster with an article supported by said caster, a wheel brake comprising:

a control arm pivotally mounted in said caster housing at a pivot point; said control arm having an interior end with a portion thereof eccentric to said pivot point and extending over the periphery of said wheel, and an exterior end that is U-shaped, with an arcuate center portion thereof extending substantially concentrically about said spindle, whereby downward force on said arm exterior end rotates said interior end into abutment with the periphery of said wheel and securely locks said wheel in place; and

a coil spring wound about a terminal segment of said arm

exterior end, and having one end thereof connected with said caster housing for resiliently urging said control arm



toward and normally retaining the same in a disengaged condition with said wheel.

4,385,415

CASTER ASSEMBLY FOR SUITCASES AND THE LIKE

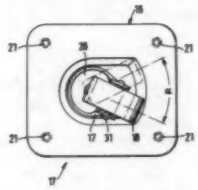
Richard Volz, Obere Hurststrasse 9, 7144 Asperg, Fed. Rep. of Germany

Filed Mar. 2, 1981, Ser. No. 239,688

Claims priority, application Fed. Rep. of Germany, Mar. 1, 1980, 3007863; May 19, 1980, 3018994

Int. Cl.³ B60B *33/00*; A45C *5/00*

U.S. Cl. 16—29 **10 Claims**



1. A caster assembly for suitcases and the like comprising in combination:

a caster housing designed to form a portion of a horizontal floor-proximate wall of a suitcase, the caster housing forming a downwardly open housing recess bounded by upstanding walls and a substantially horizontal bottom wall of the caster housing;

a bearing bracket arranged in the housing recess and rotatably connected to the bottom wall of the caster housing by means of a swivel bearing which defines a vertical swivel axis; and

a caster wheel rotatably connected to the bearing bracket by wheel bearing means, so that the bearing bracket, the caster wheel and the wheel bearing means form a swivelable subassembly, the wheel bearing means defining a horizontal bearing axis which is located a distance behind the swivel axis in the sense of caster advance and spaced from the housing bottom wall such a distance that a major portion of the caster wheel is received within the housing recess; and wherein

the upstanding walls of the caster housing include two side walls on opposite sides of and equidistant from the vertical swivel axis, the side walls and the swivelable subassembly defining abutmment means limiting the swivel range of the subassembly to an acute swivel angle, thereby making it possible to accommodate a caster wheel of comparatively large diameter in the housing recess.

4,385,416

ADJUSTABLE FURNITURE HINGE

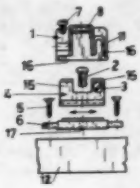
Klaus Brüstle, Fellentorstr. 23, Lauterach, Austria (A-6923), and Erich Röck, Küferstr. 7, Höchst, Austria (A-6973)

Filed Jun. 23, 1981, Ser. No. 276,635

Claims priority, application Austria, Jul. 7, 1980, 3523/80

Int. Cl.³ E05D *7/04*

U.S. Cl. 16—249 **5 Claims**



1. A hinge for mounting a door on a frame of a body of an article of furniture, said hinge comprising:

a hinge casing adapted to be connected to a door;

a mounting plate adapted to be fixedly connected to a door frame;

a hinge arm connected to said hinge casing by means of at least one hinge axle, said hinge arm having a substantially T-shaped configuration as viewed in a direction facing said mounting plate; and

means for mounting said hinge arm on said mounting plate, said mounting means including clamping screw means, extending orthogonal to said hinge axle and parallel to said mounting plate, for adjusting selectively the position of said hinge arm with respect to said mounting plate.

4,385,417

QUADRILATERAL OVER CENTER HINGE

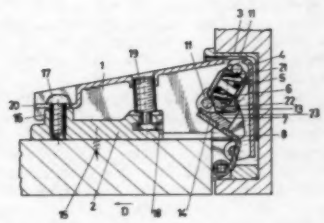
Erich Röck, Küferstr. 7, Höchst, Austria (A-6973), and Klaus Brüstle, Fellentorstr. 23, Lauterach, Austria (A-6923)

Filed Jun. 3, 1981, Ser. No. 270,122

Claims priority, application Austria, Jun. 12, 1980, A 3094/80

Int. Cl.³ E05D *15/32, 3/06*; E05F *1/12*

U.S. Cl. 16—288 **7 Claims**



1. A hinge comprising:

a hinge arm adapted to be mounted on an article of furniture, said hinge arm including a pair of hinge axles;

a hinge casing adapted to be mounted on a door of the article of furniture, said hinge casing including a pair of hinge axles;

a pair of hinge links pivotally mounted to said hinge axles of said hinge arm and to said hinge axles of said hinge casing and therewith forming a quadrangular link mechanism mounting said hinge casing and the door to be pivotable with respect to said hinge arm and the article of furniture between open and closed positions of said hinge casing and the door;

an intermediate member in the form of a shell mounted about a first end thereof for pivotal movement;

a separate guiding block mounted on one of said hinge links at a fixed position with respect thereto;

pressure spring means, mounted within said shell, for urging a second end of said shell in directions primarily to abut with said guiding block when said hinge casing is in said closed position, thereby to urge said one hinge link in a closing direction, and primarily to abut one said hinge axle of said one hinge link when said hinge casing is in said open position; and

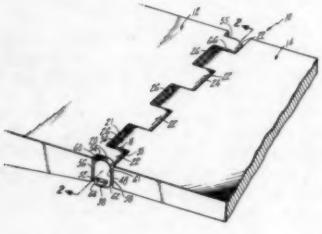
said guiding block having guiding face means for guiding movement of said shell during opening and closing movements of said hinge links and said hinge casing.

4,385,418

HINGE ASSEMBLY HAVING AN L-SHAPED LOCKING TAB

James R. Loftis, North Palm Beach, and Myron C. Starr, Jupiter, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Aug. 10, 1981, Ser. No. 291,873
Int. Cl.³ E05D 5/12
U.S. Cl. 16—381 **5 Claims**



1. A hinge assembly comprising:

a pair of opposing hinge leaves, each leaf including an edge having a row of spaced apart knuckles extending outwardly therefrom, said knuckles of opposing leaves interfitting with each other and having aligned cylindrical passageways therethrough defining a hinge line;

a hinge pin having a cylindrical shaft with a forward and rearward end, said shaft including a head at said forward end thereof, said head including a slot therethrough, said shaft extending through said aligned passageways, said pin head being disposed adjacent the first of said knuckles along said hinge line, one of said knuckles having a rearwardly facing surface spaced from said pin head; and

an L-shaped locking tab made from sheet metal having a first leg and second leg, said first leg of said locking tab being disposed in abutting relationship to said rearwardly facing surface of said one knuckle and having a hole therethrough aligned with said passageways, said hinge pin shaft extending through said hole, said second leg of said tab extending toward said pin head and including a bendable finger at the end thereof, said finger extending through said slot in said pin head and being bent to engage said head in a manner preventing movement of said hinge pin relative to said locking tab.

4,385,419

CHICKEN DEBONING APPARATUS AND METHOD

George T. Cantrell, Oakwood, Ga., assignor to Cantrell Machine Co., Inc., Gainesville, Ga.

Filed Mar. 15, 1982, Ser. No. 358,001
Int. Cl.³ A22C 21/00
U.S. Cl. 17—11 **16 Claims**

1. Apparatus for deboning chicken comprising:

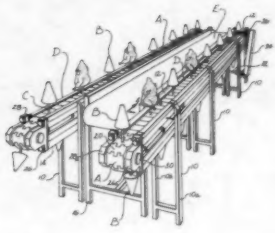
an elongated frame;

an elongated conveyor carried by said frame;

means stabilizing said conveyor against movement in vertical and transverse directions with respect to the direction of conveyance providing a generally rigid moving platform;

a plurality of chicken retaining means carried by said conveyor in spaced relation along the length of said conveyor for supporting chicken carcasses;

said chicken retaining means including cone-shaped means with a substantially smooth surface thereon receivable in an internal cavity of said chicken carcass engaging portions of said chicken carcass within said internal cavity



rigidly supporting said chicken carcass in a generally upright vertical position for permitting deboning;

means rigidly mounting said retaining means on said conveyor so that said conveyor and said retaining means, are unitarily rigid and said chicken carcasses are firmly held in said upright position as they are moved along the run of said conveyor;

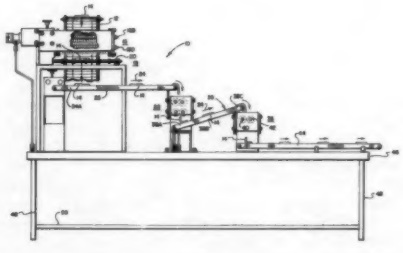
whereby persons standing along said conveyor can readily debone said chickens as said chickens are moved along the length of said elongated frame.

4,385,420

MACHINE FOR BULK TENDERIZING OPERATION

Charles L. Shelton, Garland, Tex., assignor to Quik-To-Fix Products, Inc., Garland, Tex.

Continuation-in-part of Ser. No. 152,662, May 23, 1980, Pat. No. 4,343,067. This application Mar. 2, 1981, Ser. No. 239,579
Int. Cl.³ A22C 9/00
U.S. Cl. 17—26 **1 Claim**



1. Meat tenderizing apparatus comprising, in combination:

a loading station;

a first processing station;

a first conveyor assembly having a loading end, an intermediate transporting section and a delivery end for transporting meat cutlets in a first direction of feeding movement from said loading station to said first processing station;

a first array of roller cutter pairs disposed below and adjacent the first conveyor assembly in the first processing station and extending across the delivery end of the first conveyor assembly for receiving cutlets, said roller cutter

pairs having radially projecting tenderizing elements for engaging opposite faces of the cutlet and tenderizing the cutlet along parallel lines;

an inverting station;

a second conveyor assembly having a loading end disposed below and adjacent said first array of coacting rollers for receiving cutlets as they are discharged from said coacting rollers, an intermediate transporting section and a delivery end for transporting cutlets in said first direction of feeding movement to the inverting station;

a second processing station;

a third conveyor assembly extending in a second direction of feeding movement transversely with respect to the first direction of feeding movement, said third conveyor having a loading end, a delivery end and an intermediate section for transporting cutlets from the inverting station to said second processing station, the loading end of said third conveyor assembly being disposed in the inverting station at a lower elevation relative to the delivery end of the second conveyor assembly to permit free fall and rotational inversion of said cutlet so that it is delivered in upside down position onto said third conveyor assembly;

a second array of coacting rollers disposed below and adjacent the third conveyor assembly in the second processing station and extending across the delivery end of the third conveyor assembly for receiving the inverted cutlets, said coacting rollers having radially projecting tenderizing elements for engaging opposite faces of the inverted cutlets and tenderizing the cutlets along parallel lines which extend transversely with respect to the parallel tenderizing lines produced in the first processing station;

a delivery station; and,

a fourth conveyor assembly having a loading end disposed below the coacting rollers of the second array for receiving the cutlets as they are discharged from said coacting rollers, an intermediate transporting section and a delivery end for transporting cutlets in said second direction of feeding movement to the delivery station.

4,385,421

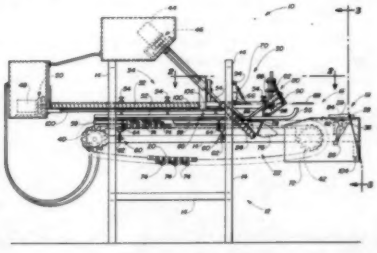
POULTRY LEG/BACK PROCESSOR

Eugene G. Martin, New Holland, Pa., assignor to Victor F. Weaver, Inc., New Holland, Pa.

Filed May 20, 1981, Ser. No. 265,636

Int. Cl.³ A22C *21/00*

U.S. Cl. 17—52 **11 Claims**



1. A poultry leg/back processor adapted for sequentially receiving a succession of manually fed poultry carcass saddle members with the tail ends thereof positioned foremost leading thereto wherein the processor is thereafter operable automatically to engage and pull-peel dismember from a carcass back section portion of said saddle members respectively from either transverse side thereof a connected thigh-leg section each with an oyster thereto attached and deliver therefrom as separated components said carcass back section portion and two thigh-leg sections said processor comprising in combination:

a. an elongated rigid supporting frame structure provided with interconnected horizontally and vertically disposed support members and having an infeed end and a delivery end the respective longitudinal extremities thereof,

b. an infeed end infeed positioning and guide section adapted for receiving in manually fed positioning thereto said succession of poultry carcass saddle members in a leg-spread tail end inward leading disposition,

c. a downwardly disposed chain link conveyor laterally intermediate and longitudinally extending about an infeed end sprocket and a delivery end sprocket respectively mounted upon laterally disposed shafts supported in said rigid supporting frame structure in longitudinally spaced relationship therein and rotationally powered in horizontal displacement delivery end direction feeding motion about said sprockets by a first motor means regulated to a first set horizontal displacement speed for chain link conveyor engagement and transport processor delivery end direction thereby of said poultry carcass saddle members by one of a plurality of chain link conveyor spatially connected dog means respectively interior the back section portion thereof,

d. a leg-distending saddle adapted to slidably receive said succession of poultry carcass saddle members in a leg-spread tail end inward leading disposition and outwardly distend said legs further to thereby openly expose the thigh-to-back section crotch junctures thereof respectively for guided passage engagement across a spaced set of tendon cutting blades to accomplish a severing of the connecting skin-tissue-tendon material therebetween vicinity said thigh-to-back section crotch junctures,

e. a thigh joint-breaking transfer section embodying a spaced set of inclined auger conveyors rotationally powered delivery end feeding by a second motor means regulated to a horizontal delivery end direction displacement speed set equivalent to said first set horizontal displacement speed and positioned to receivably engage respectively a poultry leg section hock protuberance the end of each of said outwardly distended legs and thereby provide respectively a joined coextensive horizontal delivery end direction transport thereof with said carcass back section portion and simultaneously therewith effect an elevated rotary movement respectively of said thigh-leg sections with respect to said carcass back section portion,

f. a carcass back section portion skin-severing knife assembly adapted to sever the carcass back section portion skin in a longitudinal direction along at least one line laterally intermediate thereof, and

g. a differential speed horizontal auger dismembering section embodying a spaced set of horizontal auger conveyors rotationally powered delivery end feeding by a third motor means regulated to a horizontal delivery end direction displacement speed set slower than said first set horizontal displacement speed and positioned to receivably engage respectively said poultry leg section hock protuberances slidably in maintaining each of said outwardly distended legs outwardly at an elevated position and a horizontal delivery end direction displacement speed slower than that of said chain link conveyor transported carcass back section portion and thereby effect a differential speed pull-peel dismemberment of the respective thigh-leg sections with oysters thereto attached for separate deliveries thereof from said carcass back section portion.

11. A method of dismembering poultry carcass saddle members into a poultry carcass back section portion and two poultry thigh-leg sections each respectively with an oyster thereto attached comprising the steps:

a. distending in outward opposing disposition respectively said poultry thigh-leg sections of said poultry carcass saddle member away from the carcass back section portion to thereby openly expose a thigh-to-back section crotch juncture on either lateral side thereof,

b. severing the skin-tissue-tendon connecting material comprising each of said thigh-to-back section crotch junctures,

c. displacing each thigh-to-back section crotch juncture joint by a vertically rotary displacement respectively of each thigh-leg section to a laterally disposed elevated position relative to said back section portion, and

d. while maintaining each of said thigh-leg sections respectively in said laterally disposed elevated position relative to said back section portion moving said back section portion at a differentially faster horizontal displacement speed than said thigh-leg sections to thereby effect a progressive migratory pull-peel dismemberment removal of said thigh-leg sections with oysters thereto attached from said back section portion in a manner by which each separated section is substantially free of bone fragment contamination.

4,385,422

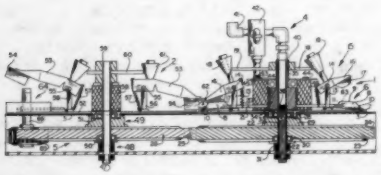
CRAYFISH PEELER

Edgar J. Ingalls, deceased, late of Baton Rouge, La. (by Lou Ellen S. Ingalls, Edith I. Hodgeson, Ellen I. Guidry, heirs), and Eddie J. Guidry, Baton Rough, La., assignors to Duzitall Equipment Corporation, Baton Rouge, La.

Filed Mar. 18, 1981, Ser. No. 244,954

Int. Cl.³ A22C *29/02*

U.S. Cl. 17—73 **8 Claims**



1. An apparatus for deheading and removable of edible meat from crayfish and similar crustaceans which comprises:

(a) a body gripper assembly rotatably mounted on a substantially flat platform base, said body gripper assembly comprising:

(i) body holder means, each having top holder means pivotly mounted to a vertical support member and extending over a bottom body holder means, each of said top body holder means having a cam accuateable member extending vertically upward, and

(ii) a body cam positionly mounted to an air discharge assembly in the center of said body holder means and shaped to accuatingly contact said cam accuateable member;

(b) a head gripper assembly rotatably mounted on a second substantially flat platform base and supported for movement in synchronized relation with said body gripper assembly through separate but tangentially related orbits wherein said gripper assemblies simultaneously move in a common direction through the point of tangency of their respective orbits, said head gripper assembly comprising

(i) multiple head holder means equally spaced about the perimeter of said head gripper assembly, each head holder means having a top head holder pivotedly mounted on a vertical head holder support member attached to a plate support and extending over said point of tangency when directly opposite one of said body holder means, each of said head holder means having a head cam member accuateably extending vertically upward, and

(ii) a head cam rotatably mounted in the center of said head holder means and shaped to accuatingly contact said head cam accuateable member at said point of tangency;

(c) said air discharge assembly having one opening of an air duct extending over each of said bottom body holders, the other end of said ducts are openable through two spaced apart openings in a main duct connected to a pressure air source; and

(d) a drive means connected to said body gripper assembly and to said head gripper assembly to cause them to rotate.

4,385,423

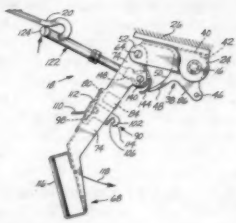
OVER-CENTER LATCHING COUPLING

Michael L. Vermilye, Redmond, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 22, 1980, Ser. No. 218,624

Int. Cl.³ A43C *11/00*

U.S. Cl. 24—71 T **13 Claims**



1. In an over-center latching device,

a latching member having one end for engaging a second member in a latched position;

an operating member having one end pivotally engaged with a support member;

said latching member having its other end pivotally engaged with said operating member for rotation of the other end of the latching member by the operating member toward the support member;

said other end of said latching member having a leaf spring to be engaged with a concave surface on said support member to rotate said latching member so as to engage said second member during rotation of the latching member by the operating member; and

said leaf spring and said concave surface being biased together during said rotation of said latching member, the spring being compressed to continue contact with the concave surface as continued rotation moves the center of the latching member pivot on the operating member over the center of the operating member pivot on the support member to secure the one end of the latching member in the latched position.

4,385,424

SAFETY BELT BUCKLE

Carl M. Petersen, III, Drayton Plains, Mich., assignor to Irvin Industries Inc., Madison Heights, Mich.

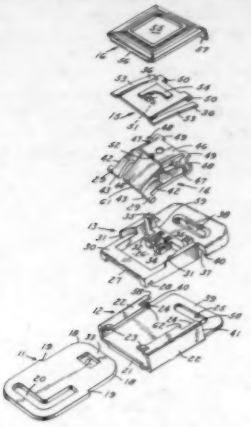
Filed Jun. 20, 1980, Ser. No. 161,424

Int. Cl.³ A44B *11/26*

U.S. Cl. 24—230 A **17 Claims**

1. A safety belt buckle comprising component tongue, frame, housing, latch lever, spring push button, and cover means, said tongue having a latch aperture, said frame having a reaction flange pivotally engaged by said latch lever for movement between engagement and release relation with said latch aperture, said housing having means for relatively positioning said latch lever and said tongue within said frame, and said push button having required resilient means for effectively biasing said latch lever in said tongue engaging relation manu-

ally deflectable to said release relation said resilient means being integral with said push button anf further comprising the



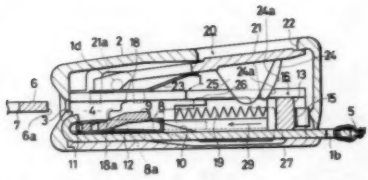
sole means for biasing said latch lever in said tongue engaging relation.

4,385,425

BUCKLING DEVICE FOR VEHICLE SEAT BELT

Koubun Tanaka, Nagoya, and Takashi Kawaharazaki, Toyoake, both of Japan, assignors to Kabushiki-Kaisha, Tokai-Rika-Denki-Seisakusho, Aichi, Japan

Filed Jun. 24, 1981, Ser. No. 276,919
Claims priority, application Japan, Jun. 30, 1980, 55-92231[U]
Int. Cl.³ A44B *11/26*
U.S. Cl. 24—230 A **1 Claim**



1. A buckling device for vehicle seat belts comprising:

tongue means having an engaging means,

frame means having an inner passageway into which said tongue means is to be inserted,

locking means movably disposed in said passageway between an locked position with said engaging means and an unlocked position away from said engaging means and usually urged toward said locked position by first spring means,

a lock controlling mechanism movably mounted on said frame means and holding said locking means in said unlocked position when said locking means is moved to said unlocked position against the effort of said first spring means and allowing said locking means to move toward said locked position, being moved when said tongue means is inserted into said passageway, and

actuating means to dislodge said locking means in the locked position,

said lock controlling mechanism comprising:

an actuator mounted on said passageway in said frame means so as to be moved from a first position to a second position against the effort of second spring means when said tongue means is inserted into said passageway, and

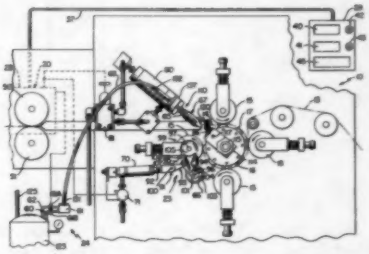
engaging means for movement from an engaged position with said locking means to a disengaged position from said locking means against the effort of third spring means when said actuator is further moved from the second position by said tongue means, whereby said engaging means serves to selectively hold said locking means in the locked position and the unlocked position, while said actuator acts to hold said locking means in the unlocked position independent of said engaging means at said second position.

4,385,426

CUTTING OF WIRE-REINFORCED HOSE

Frank A. Vitellaro, Trenton, N.J., assignor to Dayco Corporation, Dayton, Ohio

Filed Nov. 24, 1980, Ser. No. 210,065
Int. Cl.³ B23D *23/04;* B21F *11/00*
U.S. Cl. 29—33 T **9 Claims**



1. In an apparatus for cutting a flexible hose made primarily of polymeric material which has an axially extending helically wound reinforcing wire during continuous forming of said hose around a mandrel wherein said apparatus comprises means for determining length increments of the formed hose, said mandrel being a stub mandrel having a plurality of freely rotatable rollers therein, a plurality of freely rotatable forming rollers disposed about said stub mandrel for forming said hose thereon, a pair of cooperating cutters for cutting the formed hose based on each determined length increment, said cutters comprising a rotary cutter for cutting the flexible portion of said hose and a chisel cutter for cutting the wire of said hose, said cutters being operatively connected to said determining means, the improvement comprising, a first and a second fluid powered cylinder for operating said cutters, first connecting means operatively connecting said first cylinder to said rotary cutter, second connecting means operatively connecting said second cylinder to said chisel cutter, and control means for sequentially actuating said cylinders in response to each determined length increment of the formed hose, said control means providing actuation of said first cylinder to move said rotary cutter into cutting engagement followed by actuation of said second cylinder to move said chisel cutter in cutting engagement, said rotary cutter providing a helical cut in the polymeric material of said hose as a result of said rotary cutter urging same against an associated roller of said mandrel during said continuous hose forming and said chisel cutter providing a transverse cut in said polymeric material between the opposite ends of said helical cut while also simultaneously providing a cut through said wire, said first connecting means comprising a telescoping end extending from said first cylinder and a support link connected to said end and pivotally supporting said rotary cutter adjacent said stub mandrel, said link being pivotally mounted to one of said forming rollers, and said first connecting means further comprising a drive for rotating said rotary cutter, said drive comprising said one forming roller, said first cylinder serving to pivotally move said link to

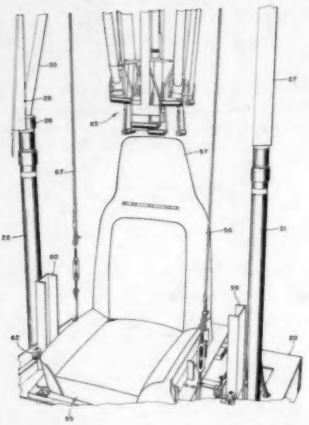
thereby move said rotary cutter into and out of cutting engagement.

4,385,427

MACHINE FOR INSTALLING UPHOLSTERY COVERS

Frederick F. Fraiser, 800 Windermere, Beulah, Mich. 49617

Filed Dec. 8, 1980, Ser. No. 214,456
Int. Cl.³ B68G *7/00, 15/00*
U.S. Cl. 29—91.5 **4 Claims**



1. In combination with a seating unit having a surface to be covered, a machine for installing an upholstery cover, said machine comprising:

a frame;

a supporting structure, means for moveably mounting said supporting structure on said frame, said supporting structure having a receptacle adapted to receive said unit preparatory to receiving a cover over at least a part thereof;

a carriage, means for moveably mounting said carriage mounted on said frame for movement parallel to the movement of said supporting structure;

at least one cantilever arm mounted on said carriage, said arm having a longitudinal axis disposed parallel to said movement, said arm being resilient and providing biasing toward said unit surface said movement causing the outer extremity of said arm to follow closely over the surface of said upholstery unit part; and

operating means for inducing said movement.

4,385,428

DRIVING APPARATUS

John S. Morris, Jr., 115 E. 8th St., Monroe, Mich. 48161

Filed Aug. 28, 1980, Ser. No. 182,027
Int. Cl.³ E04D *15/00;* **B25D** *1/00*
U.S. Cl. 29—402.01 **7 Claims**

1. The combination of apparatus for driving an object utilizing driving means for applying force, the object having a contact area through which force is received by the object and the driving means having a contact area through which force is applied by the driving means, comprising:

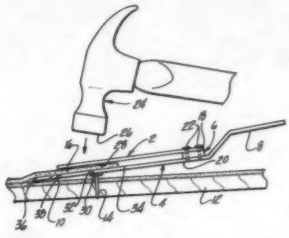
a deformable member positioned between the driving means and the object; and force transferring means including,

first means positioned between the driving means and the member for receiving force from the driving means through the contact area of the latter and having a surface engageable with the member for transferring said force to the member, said surface being larger than the contact area of the driving means; and

second means positioned opposite the first means, said member being positioned between the first and second means, the second means being in engagement with said object and having a surface in engagement with the member which is larger than the contact area of the object for receiving, through the member, the force applied to the first means and applying the force to the object.

4. A method for driving an object having a force receiving surface with a driving means having a force applying surface through a deformable member positioned between the object and the driving means, comprising the steps of:

applying driving force with the surface of the driving means to the member in the direction of the object;



distributing the force over an area of a force receiving surface of the member that is larger than the force applying surface of the driving means;

transmitting the force through the member;

receiving the force transmitted through the member over a force applying surface of the member that is larger than the force receiving surface of the object; and

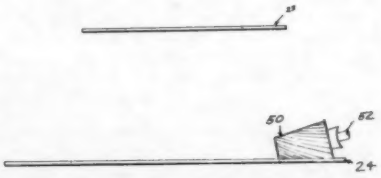
concentrating the force from the force applying surface of the member on the force receiving surface of the object to thereby drive the object.

4,385,429

METHOD OF MANUFACTURING A CLUTCH PLATE

John H. Crankshaw, Erie, Pa., assignor to Dynetics, Inc., Erie, Pa.

Division of Ser. No. 58,516, Jul. 18, 1979, abandoned. This application Apr. 30, 1981, Ser. No. 259,034
Int. Cl.³ B23P *19/00*
U.S. Cl. 29—434 **3 Claims**



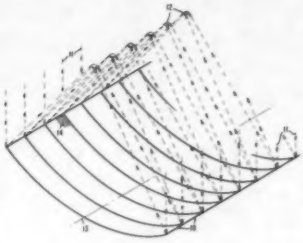
1. A method of manufacturing a clutch plate disc having a center hole comprising, providing a knurling tool that is generally frusto conical in shape having teeth running from the small end thereof towards the larger end thereof, exerting a pressure between said knurling tool and said disc and rolling said knurling tool over at least the entire surface of one side of said disc whereby grooves are formed in said disc from the center hole to the outer periphery thereof.

4,385,430

METHOD OF FORMING AN ENERGY CONCENTRATOR

Frederick T. C. Bartels, Lake View Terrace, Calif., assignor to Spectrolab, Inc., Sylmar, Calif.

Division of Ser. No. 177,306, Aug. 11, 1980, Pat. No. 4,301,321.
This application Jun. 18, 1981, Ser. No. 274,939
Int. Cl.³ B23P 3/00, 25/00
U.S. Cl. 29—458 7 Claims



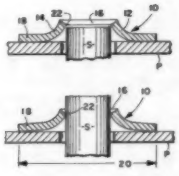
1. A method of forming an energy concentrator comprising:
(a) bending a panel to form a concave focusing surface curved about an axis, at least a portion of whose concave surface includes at least one Fresnel reflector element, the grooves of which Fresnel reflector element are so arranged as to lie substantially perpendicular to the axis of said focusing surface, thereby generating a substantially rectangular focal zone;
(b) supporting at least one panel such that the axis at each focusing surface is substantially aligned to form a common axis, the at least one panel being supported in a position to intercept and reflect incident radiant energy; and
(c) supporting at least one energy absorber at substantially the focal zone of each panel.

4,385,431

METHOD OF SECURING A STUD TO AN APERTURED PANEL

Robert J. Holton, North Caldwell, N.J., assignor to Eaton Corporation, Cleveland, Ohio

Continuation of Ser. No. 822,486, Aug. 8, 1977, abandoned, which is a division of Ser. No. 793,338, May 3, 1977, abandoned.
This application Jul. 9, 1981, Ser. No. 288,277
Int. Cl.³ B23P 19/02
U.S. Cl. 29—525 1 Claim



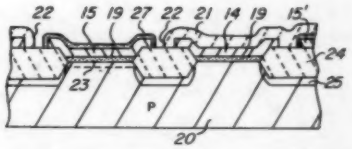
1. A method for securing a stud to an apertured panel comprising the steps of:
providing a stud having a generally cross-sectionally circular shank;
providing a panel defined by first and second substantially parallel surfaces having an opening therethrough, said opening of sufficient cross-section to receive said stud shank therethrough;
forming a one-piece, stamped, sheet metal, stud retaining fastener of the type having a generally centrally located generally annular stud engaging and retaining aperture for frictioning engaging a received stud and a generally frusto-conical continuous annulus surrounding said aperture, said fastener being formed by piercing a generally annular centrally located hole in a sheet metal blank with a piercing tool, said hole having a generally smooth continuous edge and a burred edge, maintaining said pierced hole in a generally annular configuration throughout the remainder of the fastener forming procedure, forming a generally dome shaped continuous impression in said blank with a forming tool, said impression generally coaxial with said pierced hole, and maintaining said impression continuous throughout the remainder of the fastener forming procedure, said hole piercing tool entering said sheet metal blank and said dome shaped impression forming tool contacting said blank from the same side of said blank whereby after said impression is formed said generally smooth edge will have a smaller diameter than said burred edge, said burred edge having a larger inner diameter than the outer diameter of said shank;
inserting said stud from said first surface through said opening and positioning said stud relative to said panel,
assembling said fastener to said stud shank from the second surface, said stud shank being received in said aperture from the concave side of said fastener with the smooth continuous edge of the aperture frictionally engaging the stud shank; and
sliding said fastener axially down stud shank until the fastener engages said second side of said panel while retaining the shape of said dome shaped impression and maintaining frictional contact of said smooth continuous edge of said fastener aperture with said stud shank to retain said stud in said panel.

4,385,432

CLOSELY-SPACED DOUBLE LEVEL CONDUCTORS FOR MOS READ ONLY

Chang-Kiang Kuo, Houston, and Shyh-Chang Tsaur, Stafford, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 18, 1978, Ser. No. 907,236
Int. Cl.³ H01L 21/28
U.S. Cl. 29—571 7 Claims

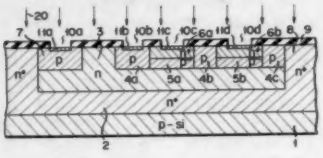


1. A method of making a read-only-memory comprising the steps of: forming a plurality of insulated gate field effect transistors in a face of a semiconductor body, each of the transistors having a source, a drain and a channel, the transistors being in a regular pattern of adjacent rows to provide an array of memory cells; applying a first pattern of conductive strips providing the gates of alternate rows of cells, and thereafter applying a second pattern of like conductive strips on said face parallel with and interleaved with the first pattern to provide the gates of the remaining rows of cells, the conductive strips of the first and second patterns being spaced closer to one another than the width of one of the conductive strips.

4,385,433
METHOD OF FORMING METAL SILICIDE INTERCONNECTION ELECTRODES IN I²L-SEMICONDUCTOR DEVICES

Osamu Ozawa, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Nov. 7, 1980, Ser. No. 204,952
Claims priority, application Japan, Nov. 10, 1979, 54-145725
Int. Cl.³ C23F 1/02; B01J 17/00
U.S. Cl. 29—576 B **3 Claims**



1. A manufacturing method of an integrated injection logic semiconductor device comprising the steps of:

forming an insulating layer on a surface of a semiconductor substrate of a second conductivity type for forming an integrated injection logic, having a first conductivity type injector region formed within a second conductivity type semiconductor region whose one surface is exposed, a first conductivity type base region formed so as to face the injector region through part of said second conductivity type semiconductor region and to expose a part of the surface thereof, and at least one second conductivity type collector region formed, of which one surface is exposed and the remaining ones are surrounded by the base region;

forming contact holes in the insulating layer at the locations, respectively, facing said injector region, the base region and the exposed surface of the collector region;

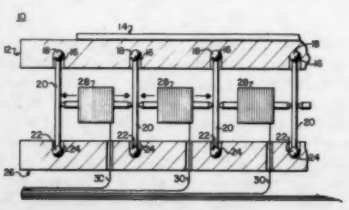
forming first, second and third semiconductor regions with first, second and third impurity concentrations on the exposed surfaces of said injector region, the base region and the collector region by injecting first conductivity type ions through the contact holes, the impurity concentrations of said first, second and third semiconductor regions being $1\times10^{19}/cm^3$ or more; and

forming interconnection electrodes made of silicide of high melting point metal on said first, second and third semiconductor regions.

4,385,434
ALIGNMENT SYSTEM

Theodore F. Zehnpfennig, Wayland, and Giuseppe Aurilio, Arlington, both of Mass., assignors to Visidyne, Inc., Burlington, Mass.

Filed Jun. 8, 1981, Ser. No. 271,786
Int. Cl.³ A61K 27/02; H01L 7/00
U.S. Cl. 29—576 B **20 Claims**



1. An alignment system for realigning one portion of a part relative to another portion of the same part comprising:

a support member for mounting a part to be realigned and having a plurality of laterally disposed zones; and

means for selectively, laterally, deforming said zones of said support member for realigning corresponding portions of a part mounted on said support member.

4,385,435
METHOD OF POWER INSERTING POLYAMIDE-IMIDE COATED MAGNET WIRE

Hollis S. Saunders; Richard V. Carmer, and Lionel J. Payette, all of Fort Wayne, Ind., assignors to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 310,681, Oct. 13, 1981, Pat. No. 4,350,738. This application Jun. 4, 1982, Ser. No. 385,217
Int. Cl.³ B32B 27/00; H01B 7/00
U.S. Cl. 29—596 **6 Claims**

1. A method of coating an electrically insulated magnet wire having an outer coating of polyamide-imide insulation comprising applying an aliphatic hydrocarbon solvent solution of oleic acid, beeswax, fluorocarbon surfactant and paraffin wax onto the polyamide-imide insulation in such amounts as to enable the resultant coated wire to be multiple winding power inserted into coil slots without damage to the insulation, and drying the coated wire.

3. In the process of power inserting multiple windings of prewound lubricated magnet wire into coil slots with substantially no evidence of wire damage in subsequent surge failure testing, the improvement comprising power inserting windings of magnet wire having an outer layer of polyamide-imide insulation coated with a lubricant mixture of oleic acid, beeswax, fluorocarbon surfactant and paraffin wax.

4,385,436
METHOD OF POWER INSERTING NYLON COATED MAGNET WIRE

Hollis S. Saunders; Richard V. Carmer, and Lionel J. Payette, all of Fort Wayne, Ind., assignors to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 312,599, Oct. 19, 1981, Pat. No. 4,350,737. This application Jun. 4, 1982, Ser. No. 385,218
Int. Cl.³ B23B 27/00; H01B 7/00
U.S. Cl. 29—596 **10 Claims**

1. A method of coating an electrically insulated magnet wire having an outer coating of nylon insulation comprising applying an aliphatic hydrocarbon solvent solution of hydrogenated triglyceride, paraffin wax and an ester lubricant composition comprising esters of fatty alcohols and fatty acids; the ratio, by weight, of paraffin wax to triglyceride being approximately 1:15 to 60:1, and the ratio of triglyceride to ester lubricant being approximately 1:30 to 30:1, onto the nylon insulation in such amounts as to enable the resultant coated wire to be power inserted into coil slots in its locking wire size range without damage, and drying the coated wire.

5. In the process of power inserting prewound lubricated magnet wire into coil slots with substantially no evidence of wire damage in subsequent surge failure testing, the improvement comprising reliably power inserting magnet wire in the locking wire size range having an outer layer of nylon insulation coated with a lubricant mixture of paraffin wax, hydroge-

nated triglyceride, and an ester lubricant composition comprising esters of fatty alcohols and fatty acids.

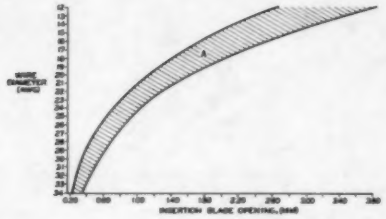
4,385,437
METHOD OF POWER INSERTING POLYAMIDE-IMIDE COATED MAGNET WIRE

Hollis S. Saunders; Richard V. Carmer, and Lionel J. Payette, all of Fort Wayne, Ind., assignors to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 312,215, Oct. 19, 1981, Pat. No. 4,348,460. This application Jun. 4, 1982, Ser. No. 385,219

Int. Cl.³ B23B *27/00*; H01B *7/00*

U.S. Cl. 29—596 **10 Claims**



1. A method of coating an electrically insulated magnet wire having an outer coating of polyamide-imide insulation comprising applying an aliphatic hydrocarbon solvent solution of hydrogenated triglyceride, paraffin wax and an ester lubricant composition comprising esters of fatty alcohols and fatty acids; the ratio, by weight, of paraffin wax to triglyceride being approximately 1:15 to 60:1, and the ratio of triglyceride to ester lubricant being approximately 1:30 to 30:1, onto the polyamide-imide insulation in such amounts as to enable the resultant coated wire to be power inserted into coil slots in its locking wire size range without damage, and drying the coated wire.

4. In the process of power inserting prewound lubricated magnet wire into coil slots with substantially no evidence of wire damage in subsequent surge failure testing, the improvement comprising power inserting magnet wire having an outer layer of polyamide-imide insulation coated with a lubricant mixture of paraffin wax, hydrogenated triglyceride, and an ester lubricant composition comprising esters of fatty alcohols and fatty acids.

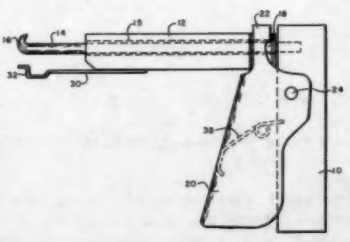
4,385,438
TOOL FOR EXTRACTING PRINTED CIRCUIT CARDS

Ansano Bertellotti, Addison, and Arvo Taliste, Downers Grove, both of Ill., assignors to GTE Automatic Electric Labs Inc., Northlake, Ill.

Filed Jun. 18, 1981, Ser. No. 274,901

Int. Cl.³ H05K *3/36*

U.S. Cl. 29—764 **5 Claims**



1. A manipulator for facilitating the extraction of a printed circuit card from a holder the latter having top and bottom parallel card guides, each card guide including at least one transversely oriented guide track having respective lateral card edges resting therein, said circuit card including, a handle mounted perpendicular to a transverse edge of said circuit card said manipulator comprising:

a first member having a shaft projecting outwardly perpendicular to said first member and said shaft terminating in a hooked end, said hooked end arranged to engage said circuit card handle;

plunger means slideably mounted to said shaft and moveable along said shaft including a retainer member extending outward from said plunger means and arranged to rest against said bottom card guide;

lever means rotatably mounted to said first member and including first and second sections said first section in communication with said plunger means and said second section disposed to have manual pressure applied thereto urging said second section toward said first member and said first section in response to said pressure moving said plunger away from said first member whereby said hook end applys a force to said circuit card handle and extracting said card from said holder.

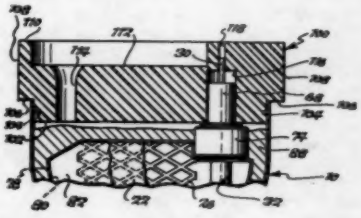
4,385,439
METHOD OF MAKING A LITHIUM-IODINE CELL

Ralph T. Mead, Kenmore; Frank W. Rudolph, Depew; Norbert W. Frenz, Jr., North Tonawanda, and Wilson Greatbatch, Clarence, all of N.Y., assignors to Wilson Greatbatch, Ltd., Clarence, N.Y.

Continuation of Ser. No. 965,254, Dec. 1, 1978, abandoned, which is a division of Ser. No. 865,849, Dec. 30, 1977, Pat. No. 4,166,158. This application Jun. 19, 1980, Ser. No. 161,058

Int. Cl.³ H01M *2/36*

U.S. Cl. 29—623.2 **3 Claims**



1. A method of making a lithium-iodine cell comprising the steps of:

(a) providing a casing of metal having an opening defined by a continuous and smooth wall inner surface portion terminating in an edge;

(b) placing a lithium anode having an operative surface in said casing;

(c) placing a one-piece filling element of a material non-reactive with iodine in said opening in a manner extending across said opening and closing said opening and sealingly contacting and covering said edge and sealingly contacting and covering a portion of said inner surface of said continuous wall portion adjacent said edge, said filling element having first and second passages therethrough, said first passage providing access into said casing, said first passage having a cross-sectional area considerably smaller than the cross-sectional area of said casing opening, said second passage sized for accommodating a part of said anode, said placing step further including inserting a part of said anode into said second passage;

(d) introducing flowable cathode material comprising a charge transfer complex of an organic donor material and iodine by flowing said cathode material through said passage of said filling element in a manner such that said

material is directed by said passage in a relatively narrow stream considerably smaller than the cross-sectional area of said casing as said material flows into said casing and into contact with said operative surface of said lithium anode;

(e) said filling element preventing said cathode material from contacting said edge and said wall inner surface portion;

(f) removing said filling element from said casing; and

(g) sealing the opening in said casing by placing a metal lid in said opening and welding the periphery of said lid to said casing adjacent said casing edge and wall portion which were kept free of said cathode material by said filling element.

4,385,440

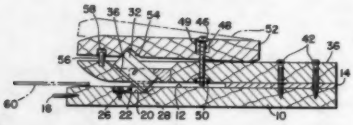
CUTTING APPARATUS

Harry T. Webb, 411 W. 5th St., San Dimas, Calif. 91773

Filed Jan. 29, 1981, Ser. No. 229,638

Int. Cl.³ B26B *29/00*

U.S. Cl. 30—294 **13 Claims**



1. Apparatus for cutting sheet material by cutting edge means thereon, comprising:

a cutting element defining said cutting edge means and comprising a single edge razor blade,

a base member having a generally planar top surface and defining a recess in said surface,

a body member having a generally planar bottom surface, said body member having a slot extending from said bottom surface and having at least one axial extremity having a prow shaped contour, said body member being elongated and having axially extending grooves on opposed sides thereof for cooperation with the fingers of a user,

spacer means for separating said top surface of said base member and said bottom surface of said body member,

a bifurcated retainer mounted in said base member recess and having first and second generally parallel coplanar arms, each of said arms extending respectively into first and second planes passing on first and second sides of said first slot, said retainer being fabricated of spring steel, and

a cover element and means for pivotally mounting said cover element on said body member, said cover element defining a notch therein for receiving a corner of said cutting edge, said means for pivotally mounting including a spring bias for urging said cover element toward said body member, said cover element being movable pivotally relative to the body member and separable therefrom against said spring bias to provide access to the cutting element.

4,385,441

CUTTING DEVICE WITH RENEWABLE CUTTING EDGE

Donald E. Young, 3702 Homewood, Cincinnati, Ohio 45227

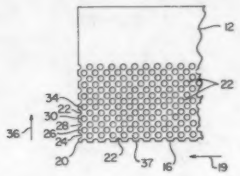
Continuation of Ser. No. 174,449, Aug. 1, 1980, abandoned. This application Oct. 13, 1981, Ser. No. 311,036

Int. Cl.³ B26B *3/00*

U.S. Cl. 30—314 **1 Claim**

1. A cutting device with a renewable substantially straight line cutting edge containing a plurality of teeth, comprising:

a cutting blade, said blade having a substantially straight line cutting edge along at least one of its extremities which extends in a first predetermined direction, said blade having a plurality of parallel rows of like circular apertures which extend through the blade along the blade's expanse in the first predetermined direction in generally parallel relationship to said cutting edge, adjacent rows of said plurality of rows being offset from each other in a second direction substantially perpendicular to said first predetermined direction with alternate rows being in substantial alignment in said second direction, each circular aperture having a diameter thereof substantially equal to the diameters of the other apertures, adjacent apertures in each row thereof being spaced from each other approximately the same distance as the length of said diameter of each said aperture and adjacent aligned apertures in said alternate



rows of said apertures being spaced from each other approximately the same distance as the length of said diameter of each said aperture, said cutting edge being defined by one of said rows of apertures being opened along a substantially straight line to provide said plurality of teeth on said cutting edge, wherein said blade has another substantially straight line cutting edge along another of its extremities, said other cutting edge being substantially perpendicular to the first-mentioned cutting edge and containing a plurality of teeth defined by opened aligned apertures in said alternate rows; and

a handle attached to said cutting blade.

4,385,442

PORTABLE POWER CHAIN SAW

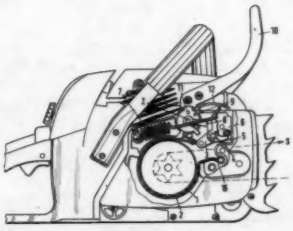
Karl Nitschmann, Schorndorf, and Günter Weidmann, Stuttgart, both of Fed. Rep. of Germany, assignors to Andreas Stihl, Waiblingen, Fed. Rep. of Germany

Filed Jan. 28, 1981, Ser. No. 229,129

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1980, 3004588

Int. Cl.³ B27B *17/00*

U.S. Cl. 30—382 **9 Claims**



1. A portable power chain saw, with a saw chain, comprising:

a safety device to protect against recoil movements of the saw;

a handle;

a finger guard, which is arranged between said handle and said saw chain and acts an an inertial mass;

an arresting device, which actuates said safety device at the beginning of a recoil movement;

a monitoring device, which responds to an operating condi-

tion of said chain saw which impairs the safe operation thereof; and

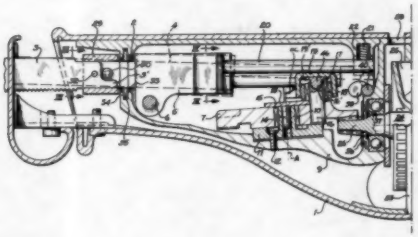
an indicator operatively connected with said monitoring device, an additional auxiliary device for actuating said safety device, said auxiliary device being releasable by said monitoring device for ultimately bringing said saw to a standstill, a housing, a pin secured to said housing, and a clutch for said saw chain, said safety device comprising a brake band which cooperates with said clutch, a dual-arm operating lever which is pivotally supported on said pin, a brake spring secured to said housing, a drag lever coupled with said finger guard, said operating lever being connected with said brake band and being braced against the tension of said brake spring by said drag lever, a control lever pivotally supported on said pin, and a torsion spring for positively connecting said control lever to said operating lever, said torsion spring, upon failure of one of said brake band and said brake spring, seeking to move said control lever into a short circuit position for an ignition device of the internal combustion engine which drives said chain saw.

4,385,443

SABRE SAW

Michael L. O'Banion, Norwich, Conn., assignor to AEG Power Tool Corporation, Norwich, Conn.

Filed Jul. 24, 1981, Ser. No. 286,541
Int. Cl.³ B27B *11/02*
U.S. Cl. 30—393 **18 Claims**



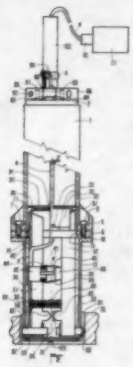
1. A portable sabre saw comprising a housing; elongated saw blade means having a rear portion in said housing and a front portion projecting beyond one end of said housing; guide means in said housing mounting said rear portion of said saw blade means for reciprocating movement in longitudinal direction and for pivotal movement about a pivot axis transverse to said longitudinal direction; eccentric means mounted in said housing rotatable about an axis inclined at an acute angle to said longitudinal direction; means connecting said eccentric means to said saw blade means for reciprocating the latter during rotation of said eccentric means in said longitudinal direction while causing said guide means to pivot about said pivot axis; and drive means in said housing for rotating said eccentric means about said inclined axis, whereby during operation of said drive means said saw blade means will carry out a reciprocating movement in longitudinal direction and a pivotal movement about said pivot axis.

4,385,444

PLUG COMPARATOR FOR CHECKING THE DIAMETER OF HOLES

Mario Possati; Guido Golinelli, both of Bologna, and Narciso Selleri, Monteveglio, all of Italy, assignors to Finike Italiana Marposs, S.p.A., S. Marino di Bentivoglio, Italy

Filed May 29, 1981, Ser. No. 268,579
Claims priority, application Italy, Jun. 2, 1980, 3438 A/80
Int. Cl.³ G01B *5/12, 7/12*
U.S. Cl. 33—143 L **7 Claims**



1. A comparator for checking linear dimensions of mechanical parts, having first support means, second support means fixed to the first support means, two movable arms supported by the second support means and bearing respective feeler elements adapted to feel the part to be checked, two fulcrums adapted to permit a motion of rotation of the movable arms with respect to the second support means, a spring having ends acting on the arms and a position transducer having two parts fastened to the movable arms, said second support means, arms and fulcrums being parts of an integral member formed of an element of stamped plate, said integral member having a support part defining the second support means, two elastically yieldable sections which define the fulcrums and two portions which define the arms, the two portions defining seats for directly housing the ends of the spring, seats to house the two parts of the transducer, seats for the feeler elements and stop elements integral with the arms for limiting the displacements of the arms towards each other, said stop elements comprising two protruding portions, one of the protruding portions terminating with an edge and the other protruding portion terminating with a flat surface.

4,385,445

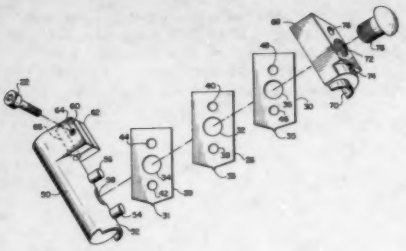
THICKNESS GAUGE

Harry A. Basinger, Hanover County, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed Oct. 15, 1981, Ser. No. 311,502
Int. Cl.³ G01B *3/22*
U.S. Cl. 33—147 R **10 Claims**

1. In a guage for measuring the thickness of a workpiece comprising a pair of workpiece contacting members and means for determining the distance between said workpiece contacting members and thus the thickness of said workpiece, the improvement wherein one of said workpiece contacting members comprises a flexible workpiece contacting blade having a workpiece contacting surface, a pair of flexible reinforcing blades surrounding said workpiece contacting blade and a pair of mounting brackets, said mounting brackets having curvalin-

ear surfaces between which said workpiece contacting blade and said reinforcing blades are held, said workpiece contacting



blade and said reinforcing blades conforming to said curvalinear surfaces of said mounting brackets.

4,385,446

PISTOL-GRIP INSTRUMENT FOR MEASUREMENT OF INSIDE DIAMETERS

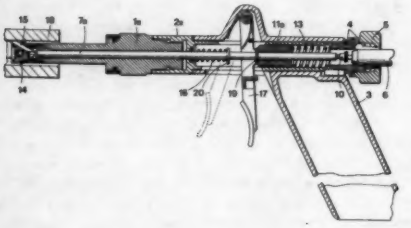
Charles Roch, Rolle, and Louis C. Golay, Neuchatel, both of Switzerland, assignors to Piere Roch S.a.r.l., Rolle, Switzerland

Filed Jan. 9, 1981, Ser. No. 223,740

Claims priority, application Switzerland, Feb. 8, 1980, 1050/80; Apr. 21, 1980, 3069/80

Int. Cl.³ G01B *5/12*

U.S. Cl. 33—178 R **5 Claims**



1. A pistol-grip instrument for the measurement of inside diameters, of the type comprising a body provided with means of attachment for fitting a comparator onto this body, and comprising also a member which is movable axially in this body and one end of which is arranged to operate measurement feelers movable radially with respect to this member, whilst the other end of this member is designed to act upon the feeler of a comparator fitted to the said body, a main spring being arranged in this body in order to tend to act upon this member in the direction in which the member forces the measurement feelers to project from the body of the instrument, and a secondary spring weaker than the main spring, being arranged in the body in order to act in the opposite direction to the main spring in order to permit these measurement feelers to retract when the main spring is prevented from acting upon them, the instrument comprising in addition a trigger for acting upon this member in order to make the main spring cease from acting upon the measurement feelers,

characterized in that the movable member includes at the place where the trigger enters into co-operation with it an operator rod intended for making contact at one end with the feeler of the comparator, and a thrust-piece mounted to slide on this rod, the main spring acting permanently at one end against this thrust-piece and bearing at its other end against a fixed portion of the body of the instrument, a stop being provided on the operator rod for limiting the displacement of the thrust-piece with respect to the operator rod under the action of the main spring, the trigger being arranged to act upon this thrust-piece against the action of the main spring in order to withdraw the measurement feelers of the instrument against the action of the main spring, the whole being in order that the force exerted by the operator rod upon the comparator can never exceed that from the secondary spring, whatever the force exerted upon the trigger.

4,385,447

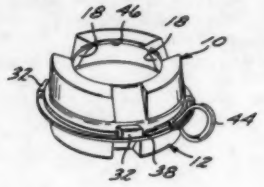
GOLF BALL SPHERICITY GAUGE

Charles J. Bennett, 5805 Tilbury St., Lakewood, Calif. 90713

Filed May 29, 1981, Ser. No. 268,481

Int. Cl.³ G01B *3/34*

U.S. Cl. 33—178 B **13 Claims**



1. A golf ball sphericity gauge comprising:

a ball cage defined by interiorly directed measuring seats carried by a pair of complemental shells, said shells being separable to permit insertion of a golf ball into said ball cage, said seats defining surface portions of a sphere of predetermined sphericity, said seats being adapted to engage a golf ball in said ball cage and prevent movement of said golf ball out of said ball cage until said shells are separated, said ball cage including an aperture enabling manual rotation of a golf ball within said ball cage thereby to detect differences between the sphericity of the golf ball and said predetermined sphericity.

4,385,448

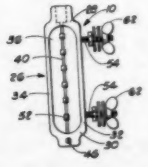
BOW SIGHT

Larry Burkey, 2805 Bella Vista Dr., Oklahoma City, Okla. 73110

Filed Jul. 9, 1981, Ser. No. 281,680

Int. Cl.³ F41G *1/46*

U.S. Cl. 33—265 **9 Claims**



1. A sight for an archer's bow comprising:

a rigid frame having a central opening therein;

a flexible sight wire extending across the opening and having its opposite ends engaged with the frame, said sight wire having a straight central core, and having a nickel wire wrapped helically around said central core; and

a plurality of spaced sight elements surrounding and frictionally engaging the sight wire and manually slidable on the sight wire.

3. A sight for an archer's bow comprising:

a rigid frame having a central opening therein;

a flexible sight wire extending across the opening and having its opposite ends engaged with the frame;

resilient means carried on said frame and constantly yieldingly urging said sight wire to a tensioned status; and

a plurality of spaced sight elements surrounding and frictionally engaging the sight wire and manually slidable on the sight wire.

8. A sight for an archer's bow comprising:

a rigid frame of rectangular configuration having a central opening therethrough, and further having a light window defined by one side of said frame and disposed in substantially coplanar alignment with said central opening for affording natural illumination of the space within said central opening;

a flexible sight wire extending across the central opening substantially parallel to the side of said frame defining said light window and having a portion crossing said central opening which is substantially coextensive in length with said light window, said flexible sight wire having its opposite ends engaged with said frame; and

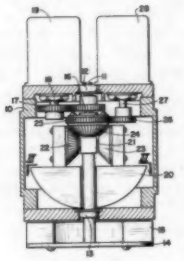
a plurality of spaced sight elements surrounding and frictionally engaging the sight wire and manually slidable on the sight wire.

4,385,449

METHOD AND APPARATUS FOR MEASURING TILT AND RELATIVE BEARING

Alvin B. Miller, Lewisville, Tex., assignor to Gearhart Industries, Inc., Fort Worth, Tex.

Filed Apr. 6, 1981, Ser. No. 250,922
Int. Cl.³ E21B *47/22*
U.S. Cl. 33—304 **20 Claims**



1. An apparatus for measuring both tilt and relative bearing comprising:

(a) a housing;

(b) a mass attached to a first shaft with said first shaft being connected to said housing such that movement of said mass results in rotation of said first shaft characteristic of the relative bearing;

(c) a mass attached to a second shaft, wherein said second shaft is operatively attached to a rotatable member, such that movement of said mass results in rotation of said member about the longitudinal axis of said second shaft characteristic of tilt and said second shaft being perpendicularly attached to said first shaft such that said movement associated with (b) also results in rotation of said rotating member about said first shaft characteristic of the relative bearing; and

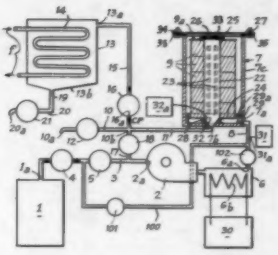
(d) a means in communication with said rotating member that converts and sums both said rotations of said member about said first and second shafts into rotation about a third shaft characteristic of the sum of tilt and relative bearing.

4,385,450

PROCESS AND APPARATUS FOR REDUCING THE AMOUNT OF LIQUID FROM A POROUS MATERIAL BY MEANS OF SUPERHEATED STEAM FROM SAID LIQUID

Jean Thomas, Verlinghem; Jacques Laneres, Bondues, and Jean P. Leonard, Marcq en Baroeul, all of France, assignors to Institut Textile de France, Boulogne, France

Filed Sep. 26, 1980, Ser. No. 190,949
Claims priority, application France, Oct. 1, 1979, 79 24440
Int. Cl.³ F26B *3/06*
U.S. Cl. 34—21 **10 Claims**



1. Process for reducing the liquid content of a porous material **9** impregnated with this liquid to a predetermined liquid content (h) which is greater than zero, said process comprising placing this material in a closed, sealed chamber **7** constituting a path for travel of fluid in a body, such that this material is interposed in said path of travel over the totality of a transverse section of the latter, feeding an inlet of said fluid path with superheated vapor of the said liquid while establishing in the fluid path respectively upstream and downstream of the material to be treated a difference of pressure ($P_1 - P_2$) in the direction going from upstream to downstream, in order that the impregnation liquid is evaporated upon contact with said superheated vapor and is carried in the vapor state by the vapor flow, measuring the vapor temperature (T_2) downstream of the material **9** and halting the feed of superheated vapor to the inlet of the fluid path when said temperature reaches a predetermined value corresponding to the said predetermined liquid content of the material.

4,385,451

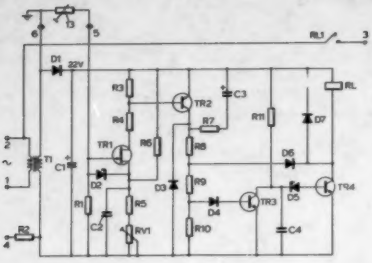
CONTROL DEVICE FOR LAUNDRY DRIER

Victor J. Wesley, London, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 23, 1981, Ser. No. 227,834
Claims priority, application United Kingdom, Jan. 28, 1980, 8002783
Int. Cl.³ F26B *21/06*
U.S. Cl. 34—53 **12 Claims**

1. A control device for a laundry drier of the kind in which a mechanical movement of the load to be dried permits at least some articles of the load to form, at least intermittently, an electrically resistive connection between contact electrodes, the control device being responsive to the state of dryness of the load, the improvement therein comprising, means for causing an electrical current flow through a resistive element and, via said contact electrodes, through said load articles such that a potential difference is developed across the resistive element which is a continuous function of the state of dryness of said load, a comparator for comparing said potential difference with a reference potential value, means coupling first and second imputs of said comparator to said resistive element and to a source of said reference potential, means coupling an output of the comparator to a resettable timing circuit having a predetermined time interval and arranged to be reset to the beginning of said predetermined time interval whenever the

detected potential difference exceeds said reference potential value, and an output switch operated by said timing circuit at



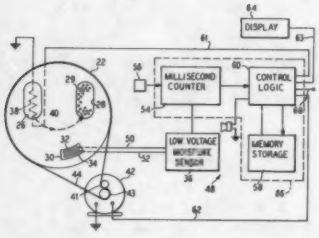
the end of a said time interval only if a resetting action has not occurred during said predetermined time interval.

4,385,452

LOW VOLTAGE SENSOR FOR DRYER

Clifford L. Deschaaf, Lincoln Township, Berrien County, and Edward H. Getz, Pipestone Township, Berrien County, both of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jun. 3, 1981, Ser. No. 270,130
Int. Cl.³ F26B *21/06*
U.S. Cl. 34—53 **10 Claims**



1. A control circuit for use in a dryer during a drying operation comprising:

a source of timing pulses;

a resettable counter arranged to be incremented in accordance with said timing pulses;

moisture sensing means operative to sense the moisture content of a clothes load and reset said counter at a rate proportional to the sensed moisture content;

said moisture sensing means comprising conductivity sensing means arranged to contact the fabric load;

comparator means arranged to compare the sensed conductivity against a predetermined value and to emit a low voltage level if said sensed conductivity is above said predetermined value and to emit a high voltage level if said sensed conductivity is below said predetermined value,

circuit means arranged to receive said voltage level and reset said counter if said voltage level is low; and

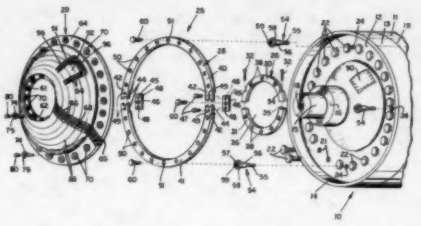
control logic means for terminating the drying operation upon accumulation of a preselected count in said counter.

4,385,453

END PANEL INSULATOR ASSEMBLY FOR TEMPERATURE CONTROLLED ROTARY CYLINDER

L. Andrew Withers, Jr., 5801 Whispering Pines Cir., Mableton, Ga. 30059; Leland A. Withers, Sr., 1706 Greenbrook Dr., SW., Austell, Ga. 30001; Jean D. Withers, Auburn, and Carlo Fineo, Austell, both of Ga., assignors to Leland A. Withers, Sr. and L. Andrew Withers, Jr., both of Austell, Ga.

Filed Apr. 28, 1981, Ser. No. 258,324
Int. Cl.³ F26B *13/08, 25/20*
U.S. Cl. 34—110 **27 Claims**



1. An end panel insulator assembly for mounting to the exterior surface of the axial end wall of a temperature controlled rotary cylinder, said end wall including a series of bolt heads protruding therefrom at its periphery and jack screw openings or other openings in an annular array at positions between said bolt heads, said end panel insulator assembly including an annular mounting ring structure sized and shaped to span the openings of the end wall of a cylinder and defining mounting openings therethrough that are alignable with the openings of the end wall of the cylinder, connector means for connecting said annular mounting ring at its mounting openings to the openings of the axial end wall of the cylinder in spaced relationship with respect to the bolt heads of the cylinder, a flexible insulator panel including a peripheral edge portion which corresponds in size and in shape to said annular mounting ring, and connector means for connecting said insulator panel at its peripheral edge portion to said annular mounting ring structure, whereby the insulator panel is stretched across the exterior surface of the axial end wall of the rotary cylinder and substantially covers the axial end wall and its bolt heads and substantially conforms to the surface profile of the axial end wall.

4,385,454

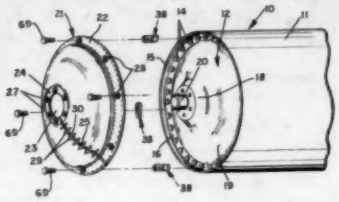
INSULATION BLANKET AND BAND CLAMPS

Jean D. Withers, Auburn; Carlo Fineo, Austell, both of Ga.; L. Andrew Withers, Jr., 5801 Whispering Pines, Mableton, Ga. 30059, and Leland A. Withers, Sr., 1706 Greenbrook Dr., SW., Austell, Ga. 30001, assignors to Leland A. Withers, Sr. and L. Andrew Withers, Jr., both of Austell, Ga.

Continuation-in-part of Ser. No. 258,324, Apr. 28, 1981. This application Oct. 2, 1981, Ser. No. 307,735
Int. Cl.³ F26B *13/08, 25/20*
U.S. Cl. 34—110 **9 Claims**

1. In combination, a heat insulation blanket including a circular outer edge with openings extending through the outer edge portion for mounting to the axial end wall of a temperature controlled rotary cylinder of the type including a cylindrical outer surface and at least one axial end wall with a plurality of connector screws in an annular array, and a plurality of blanket mounting means, said blanket mounting means each comprising a band arranged in a closed shape and of a length sufficient to span about adjacent ones of the connector screws of a rotary cylinder end wall, a blanket mounting block supported in the confines of said band, means for drawing the spans of said band extending between the connector screws inwardly toward said mounting block to draw the band tightly

about the connector screws, said mounting block defining an internally threaded opening, and a threaded screw for insertion



through an opening of said insulation blanket and into the internally threaded opening of a mounting block.

4,385,455

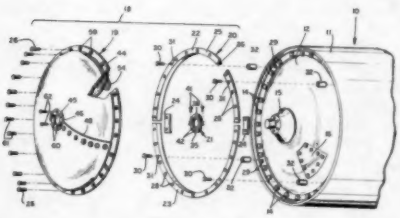
ROTARY CYLINDER END WALL INSULATOR WITH SEAL

L. Andrew Withers, Jr., 5801 Whispering Pines, Mableton, Ga. 30059; Leland A. Withers, Sr., 1706 Greenbrook Dr., Austell, Ga. 30001; Jean D. Withers, Auburn, and Carlo Fineo, Austell, both of Ga., assignors to Leland A. Withers, Sr. and L. Andrew Withers, Jr., both of Austell, Ga.

Continuation-in-part of Ser. No. 258,324, Apr. 28, 1981, and a continuation-in-part of Ser. No. 307,735, Oct. 2, 1981. This application Nov. 3, 1981, Ser. No. 317,911

Int. Cl.³ F26B *25/20*

U.S. Cl. 34—110 **16 Claims**



1. An insulator assembly for mounting to the exterior surface of the axial end wall of a temperature controlled rotary cylinder, the end wall including a series of connector screw heads protruding therefrom at its periphery in an annular array and an axle protruding centrally therefrom, said end panel insulator assembly including a one piece flexible insulator blanket with an annular outer peripheral edge portion sized to extend adjacent the connector screw heads of the rotary cylinder, a central opening with an annular inner peripheral edge portion sized to extend about the axle of the rotary cylinder, and a slot extending radially from said central opening through said annular outer peripheral edge portion, means for closing said slot, means for mounting the annular outer peripheral portion of said insulator blanket to an end wall of the rotary cylinder, and a soft annular protrusion connected to the insulator blanket adjacent the outer peripheral edge portion of the blanket and extending from the blanket toward the axial end wall of the rotary cylinder for engagement with the axial end wall inside the annular array of connector screw heads of the axial end wall of the rotary cylinder for forming an annular seal between the annular outer peripheral portion of said insulator blanket and the end wall of the rotary cylinder adjacent the annular array of screw heads.

4,385,456

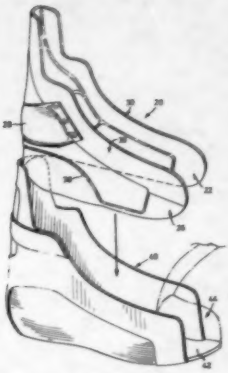
PREFORMED LINING COMPONENT FOR SKATE BOOTS AND THE LIKE

Jean Livernois, 380 Victor-Hugo #2106, St-Jean sur le Richelieu, P.Q., Canada, and Rolland Blais, 94 St Marguerite, St-Jean sur le Richelieu, P.Q., Canada (J3B 3Z9)

Filed Mar. 6, 1981, Ser. No. 241,265

Int. Cl.³ A43B *5/16, 19/00*

U.S. Cl. 36—115 **10 Claims**



1. A skate boot and the like comprising an upper defining a space for receiving a wearer's foot, and a preformed lining component disposed in said space and permanently secured to said upper so as to form an integral part of the boot, the component comprising a unitary structure of three imperforate layers laminated together in continuous surface-to-surface contact, said layers comprising: an inner layer which is intended for contact with a wearer's foot in use and which is formed by an air-pervious fabric having a nap covering its exposed surface and capable of resisting abrasion caused by movement of a wearer's foot into and out of the boot; an intermediate cushioning layer which is formed by a resilient cushioning material; and an outer layer which is co-extensive with said inner layer and cushioning layer and which is made of a water impervious material, said air-pervious fabric and said resilient cushioning material being synthetic materials unaffected by moisture.

4,385,457

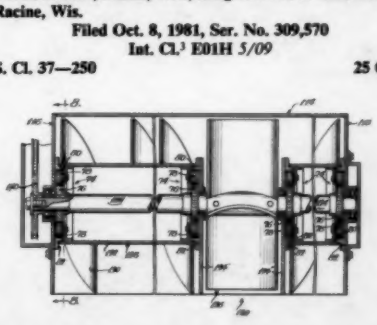
SNOW CASTER

Mark R. Fralish, Berlin, Wis., assignor to J. I. Case Company, Racine, Wis.

Filed Oct. 8, 1981, Ser. No. 309,570

Int. Cl.³ E01H *5/09*

U.S. Cl. 37—250 **25 Claims**



1. A snow caster comprising:

(a) an elongated housing having ends and an opening extending substantially between the ends defining the front of the

housing, the housing also having a discharge spout positioned rearwardly of the front;

(b) a drive shaft rotatably mounted transversely within the housing;

(c) a fan mounted on the drive shaft adjacent the discharge spout to propel material such as snow through the discharge spout;

(d) an auger unit including an auger blade fixed on an auger tube, the auger unit rotatably mounted within the housing with the drive shaft extending into the auger tube, the auger unit adapted to propel material such as snow toward the fan as the auger unit is rotated; and

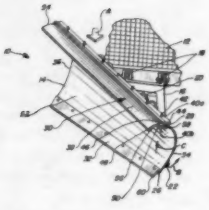
(e) a planetary gear mechanism having a sun gear fixed on the drive shaft, at least one orbital gear rotatably mounted on the auger unit, and a ring gear fixed with respect to the housing, the planetary gear mechanism operably interconnecting the fan and the auger unit such that the auger unit is rotatable at a slower speed with respect to the fan.

4,385,458

RESILIENT DEFLECTOR FOR SNOWPLOWS

Vincent J. Pitti, Norridge, Ill., assignor to Flink Company, Norridge, Ill.

Filed Aug. 26, 1981, Ser. No. 296,339
Int. Cl.³ E01H *5/06*
U.S. Cl. 37—281 **4 Claims**



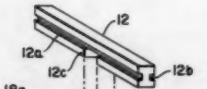
1. A snowplow deflector for attachment along the top edge of a moldboard of a vehicular snowplow comprising a tapered resilient strip having a butt end and a tip, and means for mounting said strip at its butt end along said top edge of said moldboard, said strip being adapted to be attached to said mounting means and being tapered along its length from said butt end to said tip, said strip generally having a larger thickness near said butt end than near said tip.

4,385,459

PHOTO TREE

John F. McGrath, 66 Annetta Ave., Northport, N.Y. 11768, and Albert F. Candia, 532 Pond Path, Setauket, N.Y. 11733

Filed Feb. 1, 1982, Ser. No. 344,512
Int. Cl.³ G09F *1/10*; A47G *1/06*; G09F *1/12*; A63H *33/10*
U.S. Cl. 40—124.4 **5 Claims**



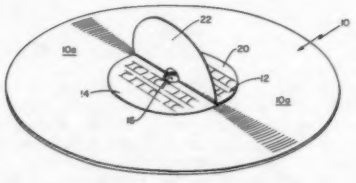
1. Apparatus for the display of photographs and the like comprising a plurality of slats, each slat consisting of an elongated member rectangular in cross section, grooves formed in at least two opposite sides of each slat, each groove extending in the direction of the elongated length of said slat, the depth and thickness of each groove being sufficient to accomodate the photographs to be displayed, each of said slats being provided with at least two dados in a side without a groove, said dados extending at right angles to the length of the slat and to a depth of about one-half the thickness of said slat, said slats being assembled into an interlocked structure in which the dados of joined slats are meshed together, forming a rigid assembly in which said photographs are supported by insertion in said grooves.

4,385,460

PHONORECORD LABEL

Richard D. Hanna, 115 Prospect St., Framingham, Mass. 01701

Filed Feb. 20, 1981, Ser. No. 236,326
Int. Cl.³ G09F *3/00*
U.S. Cl. 40—340 **3 Claims**



1. A label for consumer application to a recording, said label being characterized in that it is configured to adhere to and overlie a manufacturer's record label while leaving that label accessible for examination and comprises a mounting element hingedly mounting a message element thereof,

said mounting element being transparent and sheet-like and having opposed first and second surfaces and having a label-mounting adhesive layer carried on said second surface and further having a removable protective film covering said adhesive layer,

said message element being sheet-like with opposed third and fourth surfaces and joined to said mounting element for normally overlying the manufacturer's label to which said mounting element is adhered, and being repeatedly liftable from the manufacturer's label as a hingedly mounted flap for visual examination of the message element underside and of the manufacturer's label therebelow, and being further arranged for bearing consumer-applied information on at least one said surface thereof, and

said message element and said mounting element together forming a sheet-like label having a circular outer periphery with a diameter not greater than the diameter of a manufacturer's record label and with a central spindle-receiving hole therethrough.

4,385,461

SEQUENTIALLY HIGHLIGHTING COPY HOLDER

Hale Wingfield, 240 W. 73rd St., New York, N.Y. 10023

Filed Jul. 8, 1980, Ser. No. 166,776
Int. Cl.³ B41J *11/64, 11/38, 29/18*
U.S. Cl. 40—352 **14 Claims**

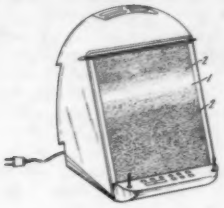
1. A copy holder for supporting and illuminating lined text for processing by an input device having a keyboard, said copy holder comprising:

a housing having a surface for supporting said lined text;

control means for selecting a portion of said lined text for illumination, said control means including,

an input rate detector responsive to the rate at which input data is entered into the keyboard for producing a signal related to the input rate;

means responsive to said input rate signal for generating a signal for varying, at a rate related to the input rate, the position of the portion of said text selected for illumination in a top to bottom direction;



illumination means responsive to said variation signal for slowly decreasing the illumination intensity of a top segment of said text portion while simultaneously slowly illuminating a second portion of said text overlapping and extending below said first portion.

4,385,462

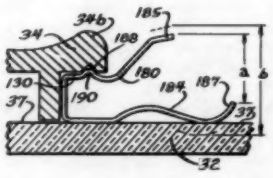
ILLUMINATED TRANSPARENCY VIEWING SYSTEM WITH OVERLAY DEVICE AND FILM CLIPS

Donald J. Brown, Naperville, Ill., assignor to Knox Manufacturing Co., Wood Dale, Ill.

Continuation of Ser. No. 868,985, Jan. 12, 1978, abandoned. This application Aug. 6, 1979, Ser. No. 63,951

Int. Cl.³ G02B *27/02*; G09F *1/10*; A47B *19/00*

U.S. Cl. 40—361 **17 Claims**



1. A system for viewing transparencies and the like, comprising: a viewer provided with a housing formed of peripheral side walls including spaced apart forward and rearward walls and spaced apart lateral walls closed by a bottom surface and a top translucent viewing surface secured to said housing to afford an inner chamber for illuminating means within said housing to illuminate said translucent top surface, and means secured to said housing and spaced above said translucent top surface for defining opposed longitudinal open channels at the forward and rearward edges of said translucent top surface; an overlay adapted to hold transparencies or the like therein and having generally parallel forward and rearward marginal edges, said overlay edges having a cross-sectional configuration generally similar to the cross-sectional configuration of said channels and being spaced apart sufficiently to allow them to be simultaneously positioned in said channels, said channels having open lateral ends so that said overlay may be held in position in contact with said translucent top surface by inserting said overlay edges into said channels at the lateral open ends thereof; and a retaining clip having a mounting portion and an operating portion, said mounting portion having a cross-sectional configuration generally similar to the cross-sectional configuration of said channels to allow it to be positioned in said channels with said operating portion being held against said translucent top surface so that a transparency inserted therebetween is retained against said translucent top surface, and whereby said overlay or one or more retaining clips may be selectively used with said viewer as desired.

4,385,463

FLOATING FIRING PIN FOR SMALL REVOLVER

Richard J. Casull, P.O. Box 276, Freedom, Wyo. 83120

Filed May 14, 1981, Ser. No. 263,417

Int. Cl.³ F41C *1/00*

U.S. Cl. 42—65 **2 Claims**

1. In a small, single action revolver of the type comprising a frame including a handle and a cylinder mounting portion, a cylinder, a barrel, a hammer, a trigger and a side cover plate which is attached to the frame and encloses the hammer and trigger in a recess in the frame of the revolver, a firing pin mechanism comprising:

a cylindrical well in the frame extending inwardly from said recess in which the hammer is mounted towards the cylinder;

a bore having a smaller diameter than said well and bored concentrically inwardly from the inner end of said well through the frame to the open space in the frame which receives the cylinder, whereby an annular shoulder is formed at the inner end of said well around the open end of said bore;

a firing pin comprising a base portion having a cylindrical shape adapted to be received in said well, with an elongate pin portion extending axially from the inner end of said base portion, said pin portion adapted to extend into and through said bore, whereby the firing pin can move in reciprocal movement such that the pin portion thereof moves longitudinally back and forth within said bore;

spring means positioned in said well between the shoulder at the inner end of said well and said base portion of said firing pin so as to bias the firing pin toward the recess in said frame; and

a lip on the inside surface of the side cover plate, said lip being adapted to engage a portion of the side edge of the rear end of the base portion of the firing pin which faces the hammer mounted in said recess, said lip limiting the rearward movement of the firing pin towards said recess as a result of the biasing force of said spring means, so that when the hammer moves to its cocked position, a portion of the rear end of said base portion of said firing pin extends into said recess, and when the hammer moves forward in the firing of the revolver, the hammer strikes the rear end of the firing pin and drives the firing pin forward against the biasing force of said spring means.

4,385,464

MOUNTING OF BARRELL AND ACTION TO RIFLE STOCK

Richard J. Casull, P.O. Box 276, Freedom, Wyo. 83120

Filed Sep. 15, 1980, Ser. No. 187,429

Int. Cl.³ F41C *23/00*

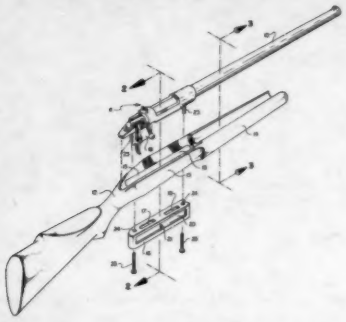
U.S. Cl. 42—75 C **4 Claims**

1. In a firearm having an elongate barrel, an action attached to the rear end of the barrel, and an elongate gun stock, said gun stock having a supporting portion for the action and a front end grip portion extending along at least a portion of said

barrel, improved means for supporting the action of said barrel comprising:

an opening through the stock at the supporting portion thereof;

a rigid insert member which fits snugly within the opening through said stock and extends beyond the top edge of said opening by a distance of from about 2 to 10 mils;



a pair of indented slots along opposite sides of the insert member such that the slots face opposite lateral inside surfaces of said opening;

means for introducing glue to said slots and thus around the insert member securely gluing the insert member to the stock; and

means for securely attaching the action which is attached to the rear end of said barrel to the upper surface of said insert member.

4,385,465

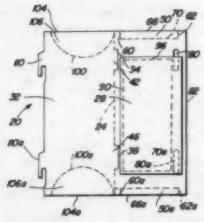
THROW-AWAY MOUSETRAP

Joseph J. Palmeri, Des Plaines, Ill., assignor to Custom Tapes Inc., Harwood Heights, Ill.

Filed May 15, 1981, Ser. No. 264,005

Int. Cl.³ A01M *23/00*

U.S. Cl. 43—58 **6 Claims**



1. A mousetrap readily erectable from an essentially flat, space-conserving planar blank into a housing configuration including a floor surmounted by an overlying roof, and integral end walls, said mousetrap comprising baseboard means of semi-rigid sheet stock,

an adhesive composition coating said baseboard means at a laterally offset areal zone thereof,

a fold-line formed in and extending across said baseboard means and dividing said baseboard means into adjacent panels comprising floor panel means coated with said adhesive composition and roof panel means pivotal at said fold line to overlie said floor panel means with a free marginal edge of said roof panel means generally paralleling and co-extensive with a corresponding free marginal edge of said floor panel means,

said floor panel means and said roof panel means provided with cooperating inter-coupling means at adjacent respective facing marginal edge portions thereof to facilitate attachment of a free marginal edge portion of said roof panel means to a corresponding marginal edge portion of said floor panel means to form a tubular housing,

said roof panel means having a greater lateral dimension than said floor panel means, thereby to establish a vaulted contour in said roof panel means upon attachment of said free marginal edge thereof to said corresponding marginal edge of said floor panel means, and

end wall means consisting of an end portion of said roof panel means integrally formed therewith to depend from said roof panel means along an arcuate fold line extending inwardly from opposed lateral edges of said roof panel means,

said end wall means defining a curved wall projecting inwardly into said tubular housing for closing said housing at an end thereof.

4,385,466

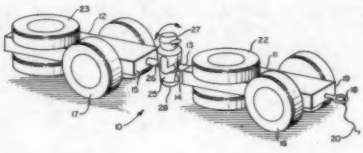
ROLLABLE TOY

Charles S. ReVelle, 826 Loyola Dr., Towson, Md. 21204

Filed Dec. 2, 1981, Ser. No. 326,518

Int. Cl.³ A63H *11/10*

U.S. Cl. 46—100 **9 Claims**



1. A rollable toy that tends to maintain a rollable position regardless of rotation about an axis thereof, comprising a toy body formed by forward and rearward body members spaced from each other by a central body section to which said body members are mounted against relative rotation, rollable supporting wheels mounted on each of said forward and rearward body members in positions radially displaced from each other with respect to the longitudinal axis of said body, and an interest-attracting device mounted on said central body section by means to enable it to move to a visually interesting position regardless of the radial position of said toy body by motion about said central body section during rotation of said toy body.

4,385,467

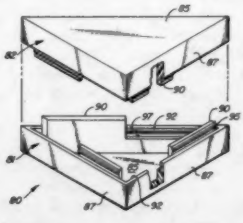
PHYSIOGNOMICALLY BASED PUZZLE TOY

Stephen S. Samuels, 28 Lower Alcatraz Pl., Mill Valley, Calif. 94941

Continuation-in-part of Ser. No. 136,125, Mar. 31, 1980, Pat. No. 4,259,804. This application Mar. 6, 1981, Ser. No. 238,351

Int. Cl.³ A63H *33/06*

U.S. Cl. 46—16 **23 Claims**



1. A puzzle toy comprising:

a plurality of layers, each layer having substantially the same generally ovoid peripheral contour;

each of said layers consisting of a plurality of elements combinable to fill the entire area within said peripheral contour;

the elements of each layer having first and second oppositely facing contrasting surfaces with the elements being reversible to fit in corresponding portions of said area to provide contrast in the appearance of said layer when said area is filled by said combined elements;

said elements within a layer being capable of filling said area while forming a contrasting nose, mouth, and eyes of a stylized face, there being a sufficient multiplicity of elements in the region of said nose, mouth, and eyes to allow at least one of the nose, mouth, and eyes to be changed with respect to the position or surface of the elements forming them that is presented to the viewer to permit variations in facial expression within said filled area;

there being a sufficient multiplicity of elements within a given layer to permit the rearrangement and reversal of elements within said layer to form, while filling said area, an abstract asymmetrical configuration reminiscent but not directly representative of a stylized face;

a predetermined portion of the area filled by a first group of said elements of a first of said layers being of a shape adapted to be filled by a second group of said elements of a second of said layers with the individual elements of said second group being of different periphery than the individual elements of said first group to provide additional variety in the range of possible facial expressions and the level of abstraction;

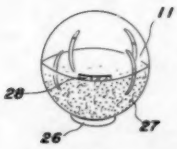
each of said elements being of composite construction including separably fastened oppositely facing contrasting portions to provide said contrasting surfaces, at least a first element and a second element of at least one of said layers having sufficient symmetry with respect to each other that said first and second elements may be disassembled and their portions reassembled to provide two new elements, each of which has non-contrasting oppositely facing surfaces.

4,385,468

PROCESS AND APPLIANCE FOR HANDILY CULTIVATING MALTS OF MANY SPECIES

Kinsui Yoshiaki, 19-19 Tenma 1-Chome, Kita-Ku, Osaka, Japan (530)

Filed Dec. 29, 1980, Ser. No. 221,116
Int. Cl.³ A01G *31/02*
U.S. Cl. 47—14 **1 Claim**



1. A process for easily cultivating malts of many species using a global cultivation appliance comprising one upper hemisphere and one lower hemisphere which includes the steps of:

(a) putting the seeds with water into the global cultivation appliance,

(b) dipping the seeds in water in the said appliance for a required time,

(c) draining away water from the said appliance except the water absorbed by the seeds themselves and between them,

(d) keeping the said appliance in condition that the seeds stick to the inner wall for a required time,

(e) supplying water just before the breakaway of the drying seeds from the curved inner wall of the said appliance,

(f) immediately draining water from the said appliance after supplying so as to keep the appropriate amount of water maintained both within and between the seeds, and

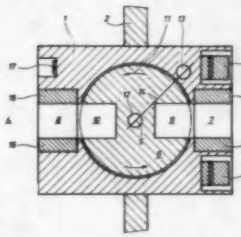
(g) repeating the above (e) and (f) operations to grow malts of many species.

4,385,469

LOCK STRUCTURE FOR ENTRY AND EXIT PASSAGES OF SENSITIVE INSTALLATION

Wolfgang Scheuerpflug, and Erbo Monnich, both of Karlsruhe, Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe G.m.b.H., Karlsruhe, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 51,671, Jun. 25, 1979. This application Apr. 27, 1981, Ser. No. 257,582
Claims priority, application Fed. Rep. of Germany, Jul. 13, 1978, 2830737
Int. Cl.³ E06B *3/24*
U.S. Cl. 49—41 **9 Claims**



1. A lock structure for passages between an outer and an inner protected area of sensitive installations enclosing radioactive materials, especially nuclear installations, said lock structure comprising a cylindrical housing arranged in said passage, a revolving body rotatably supported in said cylindrical housing about a vertical axis and having at least one lock chamber which is open at its radial outer end such that, in one angular position of said body, said chamber is in communication with said outer and, in the other angular position, with said inner, protected area; metal detectors so mounted in the walls of at least the outer area of said passage as to be capable of sensing movement of metal parts through said passage from said outer to said inner area; radiation detectors arranged in the center of said revolving body and the walls of the cylindrical housing adjacent the path of the revolving body between said inner protected and said outer area so as to define a survey plane in the path of movement of said chamber from said inner protected to said outer area; and locking means operatively associated with said lock structure and operable by signals from said detectors for locking said revolving body in predetermined angular positions.

4,385,470

INSULATED POCKET WINDOW

Jeffrey C. Bryson, P.O. Box 28, Bayfield, Colo. 81122; Clayton J. Bryson, 431 8th St., and Robert C. Bryson, 2421 Columbine Dr., both of Durango, Colo. 81301

Filed Mar. 20, 1980, Ser. No. 132,337
Int. Cl.³ E05B *65/04*
U.S. Cl. 49—63 **2 Claims**

1. An improved prefabricated window unit (10) having a viewing section (80) and a pocket section (90) containing an insulating sliding panel (120) disposed therein for mounting, as an integral structure, between the studs (20) of a wall (50) in a building and for receiving the exterior siding (30) and interior

finish material (40) of said building so that when said window unit (10) is mounted said pocket section (90) is hidden from view being disposed between said exterior siding (30) and said interior finish material (40), said wall (50) of said building being insulated to a predetermined R value, said improved prefabricated window unit (10) comprising:

an integral frame unit (15) comprising:

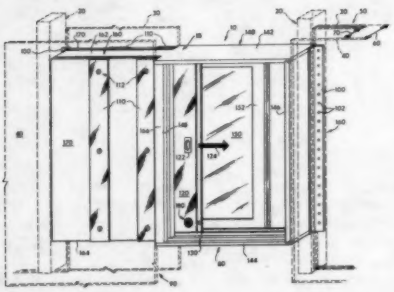
(a) an upper frame member (142, 162);

(b) a lower frame member (144, 164) parallel to said upper frame member (142, 162);

(c) a first end member (146);

(d) a second end member (168), said first and second end members (146, 168) being parallel to each other and for fixedly holding said upper (142, 162) and lower (144, 164) frame members apart at the opposing ends of said upper (142, 162) and lower (144, 164) frame members, and

(e) two opposing members (166) in parallel spaced relationship fixedly connected between said upper frame member (142, 162) and said lower frame member (144, 164) for equally dividing said integral frame unit into said viewing section (80) and into said pocket section (90), said viewing section (80) having a thickness (60) substantially equal to the thickness of said wall and being formed around its periphery by a first portion (142) said upper frame member (142, 162), said first end member (146), a first portion (144) of said lower frame member (144, 164), and said opposing members (166),



said pocket section (90) having a thickness (70) substantially equal to the thickness of the studs (70) and being formed around its periphery by said second portion (162) of said upper frame member (142, 162), said opposing members (166), a second portion (164) of said lower frame member (144, 164), and said second end member (168),

a pair of opposing insulating panels (170), in parallel spaced relationship to each other, affixed to the opposing sides of said periphery of said pocket section, the combined insulating R value through said pair of insulating panels being substantially equal to said predetermined R value,

at least one pair of opposing finishing studs (110) in parallel spaced relationship affixed between said second portion (162) of said upper frame member (142, 162) and said second portion (164) of said lower frame member (144, 164) and embedded in said opposing insulating panels (170) so that when said integral frame unit is mounted between said studs (20) said exterior siding (30) and said interior finish material (40) can be affixed to the aforesaid finishing studs (10) thereby hiding said pocket section (90) from view, the combined thickness of said affixed interior finish material (40), said opposing insulating panels with said embedded finishing studs (110) mounted on said integral frame unit, and said exterior siding (30) being substantially equal to the thickness of said wall,

means (100) affixed to the outersurfaces of said first and second end members (146, 168) for mounting to said studs (20) of said wall (50) so that said integral frame unit can be firmly mounted between said studs (20),

a track (130) affixed to the entire inner periphery of said integral frame unit between opposing members (166), said opposing insulating panels (170) and said opposing finishing studs (110), said track (130) being made from material which substantially prevents heat transfer from the exterior of said building to the interior of said building,

a panel (120) disposed in said track (130) between said upper frame member (142, 162) and said lower frame member (144, 164), said panel (120) being capable of sliding between said viewing section (80) and said pocket section (90) from an open position where said panel (120) is fully disposed in said pocket section (90) to a closed position where said panel (120) fully covers said viewing section (80), said panel (120) being made of insulating materials that have a combined R value of insulation substantially equal to said predetermined R value when said panel (120) is in said closed position,

weather stripping means (20) on said two opposing members (166) for inhibiting air infiltration between said two opposing members and said panel (120) whether said panel is in said closed position, said open position, or in transit therebetween, and

a window (150, 152) mounted in said viewing section (80) of said integral frame unit.

4,385,471

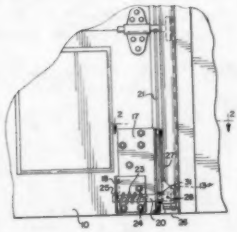
OVERHEAD DOOR STOP

Frank F. Gabry, Des Plaines, and Gene A. Borge, Plano, both of Ill., assignors to McKee Door Company, Aurora, Ill.

Filed Sep. 23, 1981, Ser. No. 304,838

Int. Cl.³ E05D *17/00*

U.S. Cl. 49—322 **6 Claims**

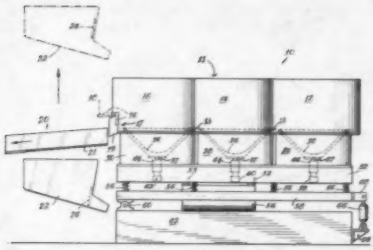


1. In an overhead door arrangement, a cable supporting the door, a guide track for the door, a flange on said track, a guide roller in the track behind said flange, a mounting fixture secured to the door, an operating shaft for said roller mounted in said fixture, a pivoted cam dog mounted on said fixture at the outer side of said flange opposite said roller, an operating arm on said cam dog normally extending generally parallel to said flange, a link connecting the free end of said arm with said cable, said cam dog having multiple teeth on one face thereof, said operating arm assuming an acute angle relative to said flange when said link is released upon breakage of said cable, and said teeth directly engaging said flange to grip such flange between the teeth and said guide roller when the operating arm assumes said acute angle to thereby stop downward movement of said door.

4,385,472
UNITARY MULTIPLE CENTRIFUGAL FINISHING APPARATUS

Gunther W. Balz, Kalamazoo, Mich., assignor to Roto-Finish Company, Inc., Kalamazoo, Mich.

Filed Feb. 26, 1981, Ser. No. 238,441
Int. Cl.³ B24B 19/00
U.S. Cl. 51—7 34 Claims

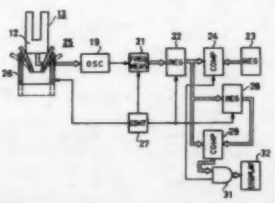


1. A finishing machine for finishing the surface of unfinished parts with finishing media, comprising a finishing chamber for receiving unfinished parts and finishing media and for finishing of parts therein, characterized in that said finishing chamber comprises a bottom and upstanding side walls and in that the bottom of said finishing chamber comprises a plurality of annular spinner members, constituting a lower portion of said finishing chamber, and complementary annular openings for said spinner members, said spinner members being adapted to rotate about an axis which is generally vertical, a rotational motion-producing assembly operatively associated with each of said spinner members comprising rotatable support means for each of said spinner members, each of which is adapted to rotate about an axis which is substantially the same as that of its complementary spinner member, and associated drive means for rotation of each of said rotatable support means, whereby each of said spinner members may be rotated with respect to its complementary opening in the bottom of the finishing chamber for carrying out a finishing operation in said finishing chamber.

4,385,473
METHOD FOR FREQUENCY REGULATION OF TUNING-FORK VIBRATOR

Shigeo Aoki, Habikino; Shuzo Isogami, Yao; Junichi Tamamura, Yao; Tatsuo Nagayoshi, Yao; Masaru Yasui, Yao, and Susumu Hirao, Osaka, all of Japan, assignors to Hosiden Electronics Co., Ltd., Osaka, Japan

PCT No. PCT/JP80/00136, § 371 Date Feb. 12, 1981, § 102(e) Date Feb. 12, 1981, PCT Pub. No. WO80/02896, PCT Pub. Date Dec. 24, 1980
PCT Filed Jun. 18, 1980, Ser. No. 237,163
Claims priority, application Japan, Jun. 20, 1979, 54-78555
Int. Cl.³ B24B 1/00
U.S. Cl. 51—281 R 11 Claims

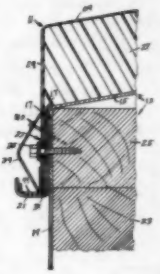


1. A method for frequency regulating a two-legged tuning-fork vibrator, comprising a first step of working said tuning-fork vibrator so that its vibration frequency becomes higher than a reference frequency which is lower than a desired frequency by a predetermined value; a second step of detecting a difference between a constrained vibration frequency produced by the vibrator when a mechanical restraint is imposed on a base portion of said tuning-fork vibrator and a free vibration frequency produced when the restraint is removed, and working said tuning-fork vibrator so as to reduce said difference; and a third step of working said tuning-fork vibrator so that its vibration frequency reaches said desired frequency, while said difference between said constrained and free vibration frequencies is maintained at a value smaller than a certain value.

4,385,474
THERMALLY AND SONICALLY INSULATING AND WEATHERPROOFING COVER FOR MOBILE HOMES

Ronald L. Earley, 212 Westbrook, Springfield, Ill. 62702

Continuation-in-part of Ser. No. 703,945, Jul. 9, 1976, abandoned, which is a continuation-in-part of Ser. No. 589,342, Aug. 13, 1975, abandoned. This application Sep. 14, 1977, Ser. No. 833,367
Int. Cl.³ E04D 13/16
U.S. Cl. 52—96 3 Claims



1. A laminated cover for thermally and sonically insulating and weather-proofing the roof of a mobile home or like building, said cover comprising: an at least one-inch-thick flexible blanket of hail-shock-absorbing and thermally and sonically non-metallic material for covering the original roof surface to be protected, and a relatively thin lamina of flexible water-proof non-metallic material overlying said blanket, at least the upper surface of said lamina being highly reflective of radiant energy, the margins of said lamina being underfolded and adhered to provide a reinforced selvage for fastening to the upper surface of a building, said selvage having screw-receiving grommets at spaced points therealong.

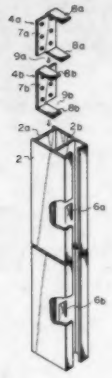
4,385,475
COMBINATION OF HOLLOW MEMBER AND BACKING MEMBER

Kenichi Nakamura, Nyuzenmachi, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Oct. 30, 1980, Ser. No. 202,350
Claims priority, application Japan, Nov. 22, 1979, 54-162197[U]
Int. Cl.³ E04B 1/38
U.S. Cl. 52—709 3 Claims

1. A combination of a hollow member and a backing member to be inserted in the hollow member characterized in that the hollow member is provided with an inwardly extending pawl and the backing member is adapted to be placed in a desired position in the hollow member by engagement with the pawl, said hollow member has a mounting plate provided with holes for passing screws at the place where another member is to be secured and said backing member comprises a backing plate portion having threaded holes and a leg portion extend-

ing from the backing plate portion substantially normally thereto and functioning to keep said backing plate portion in



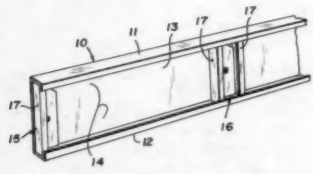
the hollow member adjacent and parallel to said mounting plate, said pawl being adapted to engage with said leg portion.

4,385,476

WEB STIFFENER FOR LIGHT-GAUGE METAL FRAMING MEMBERS

Richard E. Slager, Prospect Heights, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Filed Sep. 22, 1980, Ser. No. 189,500
Int. Cl.³ E04C *3/06*
U.S. Cl. 52—720 **22 Claims**



1. A web stiffener for channel-shaped framing members, said stiffener comprising

an integral steel compression member having a J-shaped cross-sectional configuration including

a web plate having opposite side edges and opposite bearing edges with the length of said side edges being substantially greater than the length of said bearing edges, one side edge terminating in a first flange forming a shorter arm of the J-shape and the opposite side edge terminating in a second flange forming a longer arm of the J-shape

said first and second flanges extending at generally right angles to said web plate, in substantially the same direction, from substantially the full lengths of said side edges, said flanges each having co-planar opposite bearing edges generally co-planar with an adjacent bearing edge of said web plate

said second flange having one said bearing edge shorter than the other and terminating in an inclined edge extending between said shorter bearing edge and a free edge distal the web plate side edge from which said second flange extends wherein said free edge has a length less than either side edge of said web plate

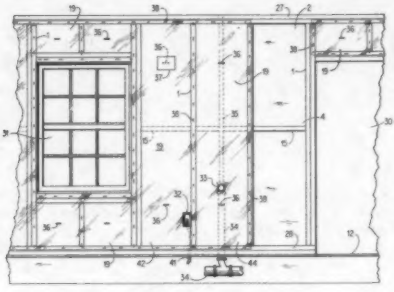
whereby said compression member is adapted for insertion at a random location along a channel-shaped framing member by rotation into position within the channel-shape facilitated by said inclined edge of said second flange, whereby said opposite bearing edges of said web plate and flanges are adapted to contact opposite arms of a channel-shaped framing member for web stiffening thereof.

4,385,477

LOOSE-FILL INSULATION METHOD AND APPARATUS

Earl M. Walls, Rt. #3, Box 396-C, Independence, Mo. 64050, and E. G. Beckman, Jr., P.O. Drawer 68, Johnsonville, S.C. 29555

Filed Oct. 23, 1981, Ser. No. 314,127
Int. Cl.³ E04B *1/74*; E04C *2/52*
U.S. Cl. 52—743 **16 Claims**



1. A method of placing loose-fill insulation in a structural component containing structure cavities prior to the placement of the interior finish onto said structural component comprising:

a. covering said structural component with a retainer barrier layer comprising shrink film;

b. opening a plurality of small entrances in said retainer barrier layer, each of said plurality of small entrances opening into one of said structure cavities, said plurality of small entrances being of sufficient number so that each of said structure cavities has one of said plurality of small entrances;

c. placing said loose-fill insulation through said plurality of small entrances into said structure cavities; and

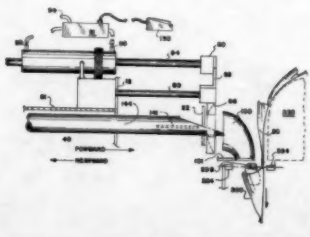
d. heating said shrink film by use of heating means prior to placing said loose-fill insulation through said plurality of small entrances into said structure cavities.

4,385,478

FOLDING AND PACKING MACHINE FOR PANTYHOSE

Bernard H. Veerkamp, Charlotte, N.C., assignor to Hosiery Corporation of America, Inc., Philadelphia, Pa.

Filed Nov. 6, 1980, Ser. No. 182,559
Int. Cl.³ B65B *43/26, 63/04*
U.S. Cl. 53—118 **8 Claims**



1. Apparatus for forming a flexible article, such as a pantyhose having a main body and a pair of leg sections, into a

bundle of a size that is insertable into an open packaging enclosure such as a sealable pouch, comprising,

rotatable means formed with an open free end section, having a pair of spaced biased ports each dimensioned to receive thereon one of said leg sections;

suction means communicating with said ports whereby upon rotation of said rotatable means, said article is rolled into a bundle adhering detachably thereto;

reciprocating pusher means axially movable on said rotatable means for pushing a bundle of flexible material, when said bundle is coiled about said rotatable means such that said bundle may fall into an open packaging enclosure suspended adjacent said apparatus;

said rotatable means comprises a rotatable spindle formed with a hollow interior chamber, with said spindle terminating at said free end in a spoon-shaped section formed as a concave section terminating in a tip with the interior chamber of the spindle communicating with said concave section of the spoon-section through said two spaced ports separated by a plate section extending axially in said spindle over and covering a part of said concave section of said spoon-shaped section leaving the remaining part of said concave section uncovered whereby a first of said two ports extends axially of said spindle on the side of the plate that covers said concave section of said spoon-shaped section, and the second port extends axially on the other side of said plate where the concave section is uncovered, whereby suction in the interior of said spindle will result in a substantially linearly axial flow of ambient air into each of said two spaced ports constituting said suction means.

4,385,479

APPARATUS FOR THE PREPARATION OF PACKAGING BLANKS BY SEVERING FROM A CONTINUOUS WEB

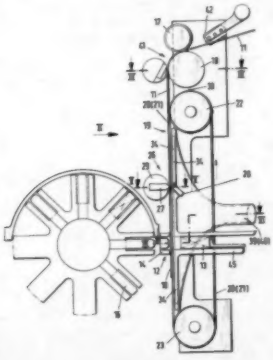
Heinz H. Focke, Verden, Fed. Rep. of Germany, assignor to Focke & Co., Verden, Fed. Rep. of Germany

Filed Dec. 3, 1980, Ser. No. 212,308

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1979, 2949685

Int. Cl.³ B65B *41/16*

U.S. Cl. 53—389 **4 Claims**



1. An apparatus for severing packaging blanks from a continuous web of packaging material, and for delivering the severed blanks to a package wrapping station, comprising:

(a) a continuous, elongated web (11) of packaging material having a width W,

(b) a pair of endless, parallel, continuously driven conveyor belts (20, 21) spaced apart at facing inner edges thereof by a distance of less than W but greater than the width of packages to be wrapped, whereby outer edges of the web overlap the inner edges of the belts,

(c) a plurality of holes (24) proximate the inner edge of each belt for communicating a vacuum pressure to overlapped outer edges of the web to hold the web on the belts for conveyance,

(d) a severing knife (27) having a width slightly greater than W disposed transversely to the belts for periodic application against the web to sever packaging blanks (10) therefrom,

(e) a plurality of opposite pairs of transversely oriented, longitudinally spaced, oblong cutouts (30, 31) defined in the respective inner edges of the belts and having depths extending beyond the width of the severing knife to permit the free passage thereof,

(f) a wrapping station (12) disposed proximate the belts beyond the severing knife in the direction of conveyance, and

(g) means for pushing an individual package (13) between the belts, against a severed blank, and into the wrapping station during the continuous conveyance of the web and severed blank, each package removing a severed blank from the belts during its passage.

4,385,480

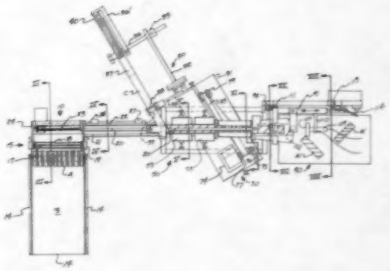
APPARATUS FOR WRAPPING OR PRODUCING CYLINDRICAL ARTICLES AND METHOD FOR SAME

Robert L. Burchette, Jr., P.O. Box 188, Spartanburg, S.C. 29304

Filed Sep. 4, 1979, Ser. No. 72,327

Int. Cl.³ B65B *11/04*

U.S. Cl. 53—399 **30 Claims**



1. A wrapping machine for cylindrical articles comprising:

(a) means for supplying cylindrical articles to be wrapped;

(b) wrapping means for continuously supplying a spiral wrapping around a series of articles supplied thereto;

(c) wrapping securement means located adjacent said wrapping means;

(d) drive means located adjacent said wrapping securement means, said drive means acting on previously wrapped articles to impart a rotary and forwarding motion to a series of previously wrapped articles and a rotary motion to unwrapped articles in contact therewith and draw wrapping therearound; and

(e) article severing means, said article severing means comprising a carriage occupying a first position adjacent said drive means for receiving a forward wrapped article of said series of articles and being moveable in a direction away from said drive means, said carriage having cutting means thereon actuatable to separate a forward wrapped article from said series of same, said carriage further having a rotatable bearing surface spaced apart from said cutting means in a direction away from said drive means, said bearing surface being axially adjustable with respect to a path of travel of said wrapped articles to vary the distance therefrom to said cutting means, said bearing surface being contactable by said forward wrapped article with said carriage being moveable away from said drive means by movement of said wrapped articles, retractor

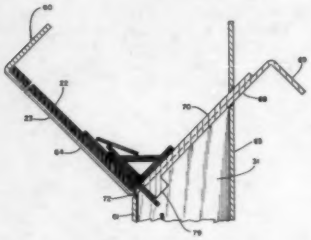
means associated with said bearing surface to move said surface axially away from contact with said forward wrapped article, first actuator means located at a predetermined position along a path of travel of said carriage to actuate said cutting means at a predetermined position to separate said first article from said series, second actuator means located at a predetermined position along said path of travel of said carriage to deactuate said cutting means and actuate said retractor means at a predetermined time whereby said bearing surface is moved axially away from said forward wrapped article and said severed forward wrapped article falls from said carriage, and means to return said carriage to said first position after said severed article falls therefrom.

4,385,481

METHOD AND APPARATUS FOR DELIVERING COINS TO COIN-WRAPPING MACHINES

Ross Capawana, 2960 Westwood Dr., #23, Las Vegas, Nev. 89109

Filed Mar. 23, 1981, Ser. No. 246,609
Int. Cl.³ G07D *3/04*
U.S. Cl. 53—461 **9 Claims**



1. A system for conveying coins to a plurality of coin processing machines comprising

a circulating coin hopper,

a single, elevated, substantially horizontally mounted endless-belt conveyor, said belt having a coin-conveying surface canted at an angle to horizontal,

transporting means for moving coins from the hopper to the belt conveyor,

a housing for said belt conveyor having a wall means extending along said belt, said wall means and said belt forming a V-shaped trough,

a plurality of spaced openings in said wall means, and gate means for adjustably closing said openings.

4,385,482

MULTIPLE STATION PACKAGING MACHINE AND METHOD FOR PACKAGING

John L. Booth, Richton Park, Ill., assignor to Booth Manufacturing Company, Fort Pierce, Fla.

Filed Jul. 16, 1980, Ser. No. 169,625
Int. Cl.³ B65B *35/38*
U.S. Cl. 53—538 **4 Claims**

1. A machine for automatically packaging layers of articles into containers comprising:

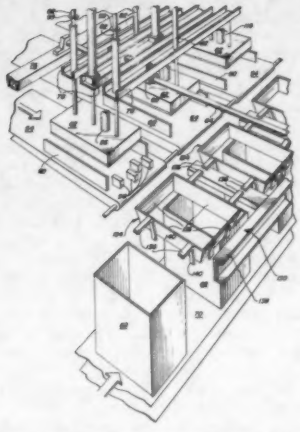
container conveying means for disposing and advancing containers for receiving articles;

a plurality of loading stations adjacent said conveying means;

a plurality of supply positions adjacent to said loading stations, each supply position being associated with one of said loading stations;

means for disposing arrays of articles at said supply positions, each array comprising a predetermined number of articles;

means for sequentially loading said containers with a layer of articles generally at each loading station, from its associated supply position, comprising a platen assembly having article pickup means constructed and arranged to pick up the articles at the supply positions and deposit them in the container at the loading stations and wherein a different



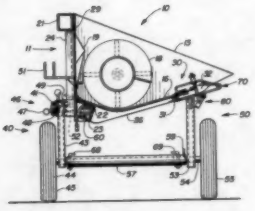
set of article pickup means is associated with each supply position and its associated loading station and means are provided for controlling the varying amount that each set of article pickup means descends into a container at that loading station.

4,385,483

TRANSPORTING A CROP HARVESTING HEADER

Irwin D. McIlwain, Lancaster, Pa., assignor to Sperry Corporation, New Holland, Pa.

Filed Jan. 19, 1982, Ser. No. 340,664
Int. Cl.³ A01B *73/00*
U.S. Cl. 56—228 **28 Claims**



1. In a crop harvesting header attachable to a mobile base unit and operable to sever standing crop material to initiate the crop harvesting process and to convey the severed crop to the base unit for further harvesting treatment, said header having a frame including a transverse upper main beam, a transverse lower main beam connected to said upper beam by a plurality of generally vertical frame members, a plurality of forwardly projecting support ribs connected to said lower beam, and two opposing sidesheets supported by said upper and lower beams and defining the transverse width of said header; a transverse cutterbar supported by said support ribs between said sidesheets and forwardly of said lower beam to sever standing crop material, said cutterbar having a primary support member connected to said support ribs and extending between said sidesheets; and conveying means for discharging severed crop

material from the header toward the base unit, the improvement comprising:

a first wheel assembly pivotally connected to said frame and movable between a retracted position and a ground engaging position to mobilely support a part of the weight of said header above the ground when in said ground engaging position for movement thereof in a transverse direction;

a second wheel assembly detachably connectable to said cutterbar forwardly of said first wheel assembly to mobilely support a part of the weight of said header above the ground when said second wheel assembly is connected to said cutterbar for movement of said header in a transverse direction; and

attachment means connected to said header frame adjacent one of said sidesheets for the detachable connection of said header to a source of motive power for movement of said header in a transverse direction after being detached from said base unit.

4,385,484

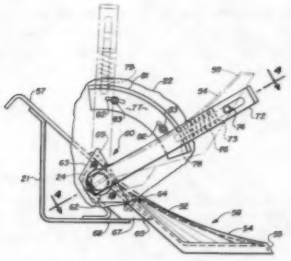
PIVOTABLE SHIELDS FOR DISC MOWER-CONDITIONER

Philip J. Ehrhart, Narvon, and Peter P. Haldeman, Reinholds, both of Pa., assignors to Sperry Corporation, New Holland, Pa.

Filed Aug. 20, 1981, Ser. No. 294,589

Int. Cl.³ A01D *67/00, 14/00*

U.S. Cl. 56—320.1 **16 Claims**



1. In a crop harvesting machine having a mobile frame adapted for movement over a field; a transverse cutterbar supported by said frame and having a plurality of rotatable cutter units for severing standing crop material by impact action; rotatable crop conditioning means mounted on said frame rearward of said cutterbar for conditioning severed crop material; crop conveying means mounted on said frame adjacent said cutterbar and said crop conditioning means for conveying severed crop material rearwardly from said cutterbar toward said crop conditioning means; transverse shielding means supported by said frame over said cutterbar to form a guide surface cooperable with said crop conveying means to transfer severed crop toward said crop conditioning means; and drive means for operatively powering said crop conveying means, said crop conditioning means and said cutterbar, the improvement comprising:

pivot means supported on said frame and connected to said transverse shielding means for selectively pivotally rotating said shielding means between a lowered operative position, wherein said shielding means is cooperable with said crop conveying means to guide and transport severed crop material toward said crop conditioning means, and a raised inoperative position, wherein said cutter units are exposed for access thereto from above, said pivot means including an elongated shaft having a first end, a remote second end and an axis of rotation extending therebetween, said first and second ends being rotatably supported on said frame, said shielding means being connected to said shaft and rotatable therewith, said pivot means further including limit means engageable with a stop on said frame for limiting the pivotal movement of said shielding means and preventing said shielding means from being lowered below said operative position to interfere with the rotation of said cutter units.

4,385,485

METHODS AND APPARATUS FOR FABRICATING OPTICAL FIBER CABLES

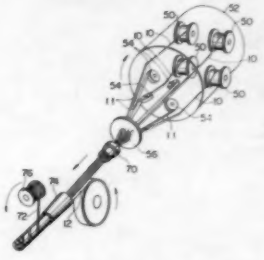
Shinichi Yonechi, Yokohama, Japan, assignor to Sumitomo Electric Industries Ltd.

Division of Ser. No. 928,024, Jul. 25, 1978, Pat. No. 4,235,511. This application Apr. 30, 1980, Ser. No. 145,087

Claims priority, application Japan, Jul. 25, 1977, 52-89464; Nov. 25, 1977, 52-141831; Dec. 30, 1977, 52-158044

Int. Cl.³ H01B *13/02, 13/06, 13/26*

U.S. Cl. 57—13 **16 Claims**



1. A method of producing an optical fiber cable, comprising the steps of:

(a) feeding a plurality of splicing tapes and a plurality of optical fibers from a rotary cage;

(b) folding each said splicing tape to a desired cross-section shape so as to form a recessed portion;

(c) loosely disposing each said optical fiber into the recessed portion of a designated one of said folded splicing tapes; and

(d) gathering and stranding said folded splicing tapes and associated optical fibers by using an assemblage die.

4,385,486

APPARATUS FOR MANUFACTURING OPEN CORD

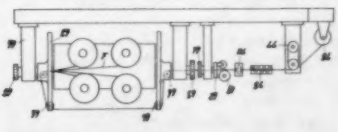
Shouji Iwata, Suita; Masaru Tanaka, Miki; Fumio Yamashita; Hideharu Kurobe, both of Ono, and Takuo Itani, Kobe, all of Japan, assignors to Tokusen Kogyo Kabushiki Kaisha, Ono, Japan

Filed Oct. 21, 1980, Ser. No. 199,216

Claims priority, application Japan, Oct. 22, 1979, 54-136571; Dec. 21, 1979, 54-167018; Jun. 14, 1980, 55-83603; Jun. 14, 1980, 55-83604; Jun. 14, 1980, 55-83605; Jul. 11, 1980, 55-95270; Jul. 11, 1980, 55-95271

Int. Cl.³ D07B *3/00, 7/00*

U.S. Cl. 57—58.52 **9 Claims**



1. An apparatus for manufacturing an open cord formed of a plurality of wire strands which are intertwisted evenly with spaces therebetween, said apparatus comprising:

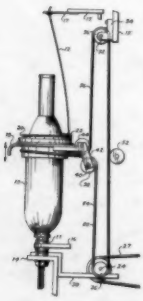
a machine base;
feed reel means for feeding a plurality of wire strands;
a twist starting roller for converging said wire strands drawn from said feed reel means;
a false twisting roller for imparting twisting strains to said converged wire strands;
a cradle swingably mounted between a pair of flyers positioned oppositely, rotatably and drivably on said machine base, said converged wire strands being twisted twice by said flyers to form a cord;
an overtwist roller mounted on said cradle for imparting an overtwist to said cord which has been twisted twice;
a captan and a take-up reel for taking up said cord; and
a lay plate fixed with respect to an inner race of a bearing means having an outer race fixed with respect to said machine base, said lay plate having therein a plurality of holes through which respective of said wire strands pass, such that said lay plate is rotatable within said bearing means by passage of said wire strands through said holes, said holes being equally spaced around a circumference passing through the centers of said holes.

4,385,487

CONTROLLED RING DRIVE

Manuel Costales, and Moustafa I. Hakki, both of P.O. Box 884, Belmont, N.C. 28012

Filed May 5, 1980, Ser. No. 146,234
Int. Cl.³ D01H 7/58, 1/241
U.S. Cl. 57—105 **8 Claims**



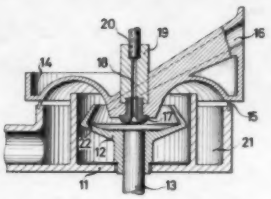
1. In a machine having a frame including
a. a spindle rail,
b. bobbins on the spindle rail,
c. bobbin drive means connected to the bobbins for rotating the bobbins at high speed,
d. a ring rail around each bobbin mounted on the frame to move up and down,
e. a ring on the ring rail around each bobbin,
f. each of the rings mounted for rotation on the ring rail,
g. a traveler on each ring for feeding yarn to each bobbin,
h. a drive pully on the spindle rail, and
i. a draw works support above the spindle rail; the improved structure for rotating each ring comprising:
j. a draw idler on the draw works support,
k. a draw directional pulley on the ring rail,
l. a drive directional pulley on the ring rail,
m. a ring belt trained from
(i) the drive pulley to
(ii) the drive directional pulley around
(iii) a plurality of the rings to
(iv) the draw directional pulley to
(v) the draw idler and back to
(vi) the drive pulley.

4,385,488

OPEN-END SPINNING DEVICE

Hans Raasch, Monchen-Gladbach; Jakob Lenzen, Korschenbroich, and Klaus Pohl, Monchen-Gladbach, all of Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany

Filed Mar. 26, 1981, Ser. No. 247,650
Claims priority, application Fed. Rep. of Germany, Mar. 29, 1980, 3012314
Int. Cl.³ D01H 1/135, 7/882
U.S. Cl. 57—417 **8 Claims**



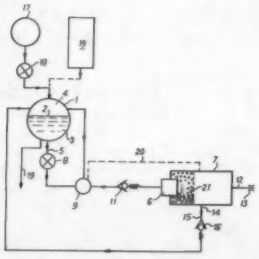
1. Open-end spinning device, comprising a rotor housing, a spinning rotor disposed in said rotor housing, a housing cover having a fiber feeding channel formed therein being in communication with said rotor, a thread delivery channel disposed in said cover, and a thread delivery orifice being at least partly disposed in said cover and being in communication with said thread delivery channel and rotor, said orifice having a hard and wear-resistant surface layer at thread deflection locations, said surface layer having areas of different wearability distributed therein, and said areas of different wearability being insular granular islands having distinct boundaries of random and irregular contour and size.

4,385,489

FUEL SYSTEMS FOR GAS GENERATORS

Adrian Abbott, Reading, England, assignor to British Aerospace Public Limited Company, London, England

Continuation of Ser. No. 53,605, Jun. 29, 1979. This application Jun. 19, 1981, Ser. No. 275,465
Claims priority, application United Kingdom, Jul. 13, 1978, 29746/78
Int. Cl.³ F02C 7/22
U.S. Cl. 60—39.06 **3 Claims**



1. A method of supplying a monopropellant or bi-propellant fuel from a fuel reservoir to a gas generator, the fuel reservoir being connected to both an inlet and an outlet of a combustion chamber via flow control means, the method comprising the steps of:
effecting initial pressurization of the fuel reservoir to permit fuel to flow to the gas generator and to the combustion chamber, and arranging for the quantity of fuel supplied to

the combustion chamber to be such as to pressurize the combustion chamber to a higher pressure, below a predetermined maximum, than the pressure of the incoming fuel;

closing the fuel control means disposed between the fuel reservoir and the inlet of the combustion chamber so as to arrest the flow of fuel to the combustion chamber, and subsequently opening the flow control means disposed between the fuel reservoir and the outlet of the combustion chamber, whereby the pressure in the fuel reservoir rises until the pressure in the combustion chamber decays due to the exhaustion of the fuel previously supplied thereto;

closing the flow control means disposed between the fuel reservoir and the outlet of the combustion chamber when the pressure in the latter falls below that in the fuel reservoir, and subsequently opening the flow control means disposed between the fuel reservoir and the inlet of the combustion chamber so that fuel flow to the combustion chamber is resumed; and

rearranging for the quantity of fuel supplied to the combustion chamber to be such as to pressurize the combustion chamber to a higher pressure, below the predetermined maximum, than the pressure of the incoming fuel, such that the alternately permitted and arrested fuel flow to the combustion chamber is cyclical and self-generating.

4,385,490

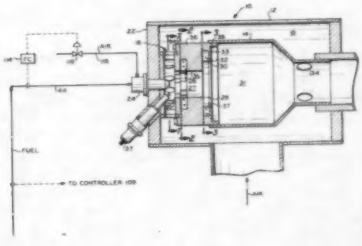
COMBUSTORS AND METHODS OF OPERATING SAME

Robert M. Schirmer, and Ellsworth H. Fromm, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 933,344, Aug. 14, 1978, abandoned. This application Dec. 23, 1980, Ser. No. 220,210

Int. Cl.³ F02C *3/14, 7/00*

U.S. Cl. 60—39.23 **14 Claims**



1. A combustor, comprising, in combination:

a flame tube:

a dome member disposed at the upstream end of said flame tube; an air-assisted fuel inlet means disposed in said dome member for introducing a stream of fuel into an upstream first, cylindrical, combustion section of said flame tube;

a variable first air inlet means provided in said dome member for admitting a variable volume of a first stream of air through said dome member, around said fuel inlet means, and into said first combustion section of said flame tube;

a second air inlet means disposed in the wall of said flame tube for admitting a second stream of air into said first combustion section in a circumferential direction and tangential to the wall thereof;

a third air inlet means disposed in the wall of said flame tube downstream from said second air inlet means for admitting a third stream of air into a second, cylindrical, combustion section in a circumferential direction and tangential to the wall thereof, said second combustion section being located in said flame tube downstream from, concentric with, and in communication with said first combustion section said second section having an abrupt enlargement of diameter so that the volume capacities of the first combustion section to the second combustion section being in a ratio in a range of about 1:35 to about 1:45; and

means for varying the pressure, or the volume, of a stream of assist air to said fuel inlet means in accordance with the rate of introduction of said fuel.

4,385,491

ENGINE MIXTURE CONTROL SYSTEM CONTROLLING PRIMARY AND SECONDARY AIR-FUEL MIXTURES

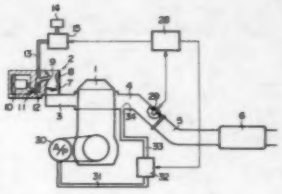
Kazuhiro Sakurai; Hiroshi Sawada, and Kyo Hattori, all of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Dec. 31, 1980, Ser. No. 221,889

Claims priority, application Japan, Jan. 8, 1980, 55-1039

Int. Cl.³ F01N *3/22*

U.S. Cl. 60—276 **2 Claims**



1. For an internal combustion engine comprising:

(a) an intake system;

(b) an exhaust system; and

(c) a mixture supply device, which includes an air bleed system incorporating a bleed air flow control device and supplies primary fuel-air mixture to said intake system, the air/fuel ratio of said primary fuel-air mixture being increased as bleed air flow rate is increased;

an air/fuel ratio control system, comprising:

(d) a source of secondary air;

(e) a secondary air supply system, which includes a secondary air flow rate control device and conducts a controlled flow of secondary air from said source of secondary air to an intermediate portion of said exhaust system;

(f) an exhaust gas oxygen sensor, which detects the concentration of oxygen at a measurement point of said exhaust system downstream of said intermediate portion at which the air from said secondary air supply system is supplied into said exhaust system, and which produces a first secondary air flow control electrical signal representative of said concentration of oxygen;

(g) a buffer amplifier, which receives said first secondary air flow control electrical signal and produces a second secondary air flow control electrical signal representative of the air/fuel ratio of exhaust gases at said measurement point in said exhaust system;

(h) a reference value signal production circuit, which produces a reference value electrical signal representative of a predetermined air/fuel ratio of exhaust gases such as a stoichiometric air/fuel ratio;

(i) a comparator, which receives said second secondary air flow control electrical signal and said reference value electrical signal, compares these two electrical signals, and produces a rectangular wave electrical signal which changes between first and second levels according to plus or minus of the balance between said two electrical signals;

(j) a secondary air flow control circuit, which receives said rectangular wave electrical signal, and produces a third secondary air flow control electrical signal for controlling said secondary air flow rate control device;

(k) a primary air/fuel ratio computing circuit, which receives said rectangular wave electrical signal, and integrates portions of said rectangular wave electrical signal

of said first level with a first time constant which provides a predetermined positive tangent of angle x_1 while integrating portions of said rectangular wave electrical signal of said second level with a second time constant which provides a predetermined negative tangent of angle x_2, said first and second time constants being so determined that, when the ratio of duration of said first level portion to the sum of durations of said first and second level portions in one cycle of said rectangular wave electrical signal is a selected value, an amount of integration by said first time constant is exactly cancelled by an amount of integration by said second time constant in one cycle of said rectangular wave electrical signal; and

(1) a primary fuel-air mixture control circuit, which controls said bleed air flow control device according to the result of integration by said primary air/fuel ratio computing circuit so as to increase bleed air flow rate from a standard value according to a positive value of said result of integration and to reduce bleed air flow rate according to a negative value of said result of integration.

4,385,492

TURBINE

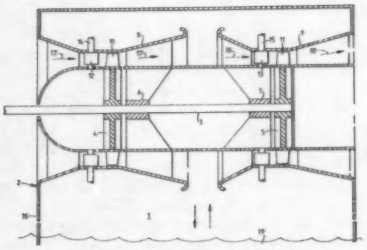
Alan S. Lee, Leicester, England, assignor to The English Electric Company Limited, London, England

Filed Sep. 17, 1980, Ser. No. 188,065

Claims priority, application United Kingdom, Sep. 20, 1979, 7932681

Int. Cl.³ F03B *13/12*

U.S. Cl. 60—398 **5 Claims**



1. An axial-flow turbine having two spaced arrays of rotor blades (**10**, **11**) mounted on a common shaft (**3**), a common passage (**1**) for working fluid communicating with the space between the rotor blades, an inlet (**17**) for the working fluid to said space and passage through one array of rotor blades, an outlet (**18**) from the space and passage through the other array of rotor blades, an inlet valve (**12**) substantially preventing working fluid from passing from said space between said one array of rotor blades (**10**) and an oulet valve (**13**) substantially preventing working fluid from passing into said space through said other array of rotor blades (**11**), the blades being oriented in the same sense, whereby working fluid passing into and out of said space drives the rotors (**4**,**5**) in the same direction.

4,385,493

HYDRAULICALLY ASSISTED STEERING DEVICE

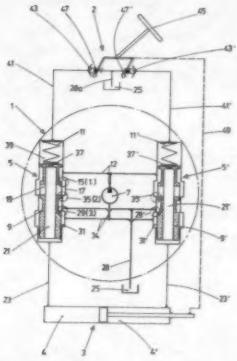
Armin Lang, Schwabisch Gmund, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, AG, Friedrichshafen, Fed. Rep. of Germany

Filed Aug. 6, 1980, Ser. No. 175,746

Int. Cl.³ F15B *11/08, 13/042*

U.S. Cl. 60—464 **8 Claims**

1. In a fluid power assisted steering device including a high pressure pump (**7**) having a suction port (**34**) and a pressure port (**12**); a reservoir tank (**25**), at least one steering motor (**3**) having opposed working chambers (**4**, **4'**); two steering valves, each of the steering valves having a housing enclosing a pressure chamber in permanent fluid communication with one of the working chambers of the steering motor and an actuating chamber, each steering valve, also, having a spring-loaded valve piston displaceable in opening and closing directions, said valve pistons being mechanically independent of each other, each of the valve pistons having two flow control means for respectively establishing fluid communication from the pressure port of the pump to the pressure chamber and from the pressure chamber to the reservoir tank and throttle flow means between the pressure and actuating chambers for opening of one of the two flow control means in response to an increase in pressure in the actuating chamber relative to pressure in the pressure chamber; a pair of pre-control valves respectively connecting the actuating chambers of the two steering valves to the reservoir tank, each of said pre-control valves being biased by a valve closing spring, and an actuating device (**45**) drivingly connected to the valve closing springs of the pre-control valves; the improvement residing in said pump



(**7**) being of a reciprocating piston type controllable through the suction port (**34**) thereof, third flow control means (**29**) on each of the valve pistons of the steering valves for connecting the suction port to the reservoir tank, conduit means (**12**) connecting the pressure port of the pump to the two steering valves for supply of pressurized fluid to the steering valves independently of each other, said third of the flow control means (**29**) and the first of the flow control means (**15**) being sequentially closed followed by opening of the second of the flow control means (**35**) during displacement of the valve piston associated therewith in the closing direction resulting in pressure in each of the working chambers of the steering motor (**3**) increasing at a rate proportional to force applied to the actuating device (**45**) up to a cut-out level; and a cut-out device connected to the actuating device and the steering motor for permitting a rise in pressure in the working chambers at a rate substantially greater than said proportional rate when the pressure in the working chambers exceeds the cut-out level.

4,385,494

FAST-ACTING SELF-RESETTING HYDRIDE ACTUATOR

Peter M. Golben, Wyckoff, N.J., assignor to MPD Technology Corporation, Wyckoff, N.J.

Filed Jun. 15, 1981, Ser. No. 273,852

Int. Cl.³ F03G *7/00*

U.S. Cl. 60—528 **11 Claims**

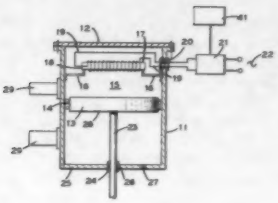
9. A self-setting actuator comprising

A. an enclosing means containing hydrogen gas;

B. means responsive to changes in pressure of said hydrogen gas and adapted to provide an actuating force;

C. electric resistance means in said enclosing means including a resistive element made of a hydridable electric conductor said hydridable electric conductor being charac-

terized by a low resistivity when not hydrided and a higher resistivity when hydrided, and



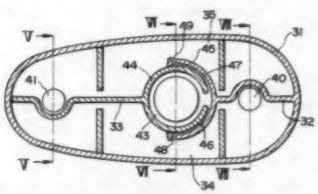
D. means for passing electric current through said resistive element upon command.

4,385,495

FLUID RESERVOIR FOR TANDEM MASTER CYLINDER

Hitoshi Kubota, Fujisawa, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Nov. 4, 1980, Ser. No. 203,932
Claims priority, application Japan, Nov. 12, 1979, 54-145473
Int. Cl.³ F15B 7/00
U.S. Cl. 60—535 **5 Claims**



1. A fluid reservoir for supplying hydraulic fluid to a horizontally extending tandem master brake cylinder, said reservoir being mounted on top of and extending lengthwise substantially parallel to the horizontal axis of the brake cylinder, said reservoir comprising:

a primary chamber extending the full length of said reservoir and having a primary fluid outlet communicating with a primary side of the cylinder,

a secondary chamber extending the full length of said reservoir and having a secondary fluid outlet communicating with a secondary side of the cylinder,

vertical partition wall means extending the full length of said reservoir for structurally separating said primary chamber from said secondary chamber, said partition wall means including means for permitting fluid communication between said primary and secondary chambers, and

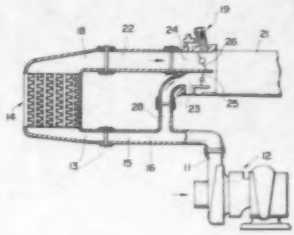
said primary chamber and said secondary chamber each having a floor which slopes down lengthwise substantially the full length of said reservoir, one of said chamber floors sloping down lengthwise in one direction, and the other of said chamber floors sloping down lengthwise in the opposite direction, each said fluid outlet being formed at the lowest point in each said sloping floor.

4,385,496

INTAKE SYSTEM FOR INTERNAL COMBUSTION ENGINE PROVIDED WITH SUPERCHARGER

Ken Yamane, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Oct. 10, 1980, Ser. No. 195,975
Claims priority, application Japan, Oct. 24, 1979, 54-146252[U]
Int. Cl.³ F02B 33/44
U.S. Cl. 60—599 **7 Claims**



1. An air intake system connecting a supercharger to an internal combustion engine, said air intake system comprising:

(a) a first air passage for conducting the air from the supercharger to the engine;

(b) an air cooler disposed in said first air passage between the supercharger and the engine;

(c) a second air passage for conducting the air directly from the supercharger to the engine bypassing said air cooler; and

(d) control means for controlling the air flow rates in said first air passage and said second air passage, thereby controlling the temperature of the intake air for the engine, said control means comprising a throttle device having:

(i) a primary throttle bore formed at the downstream end of said second air passage and a primary throttle valve mounted in said primary throttle bore; and

(ii) a secondary throttle bore formed at the downstream end of said first air passage and a secondary throttle valve mounted in said secondary throttle bore.

4,385,497

PROPULSION SYSTEM FOR WATER WHEEL

Dan J. Scott, 967 Gibbon Rd., Central Point, Oreg. 97502

Filed Aug. 3, 1981, Ser. No. 289,505
Int. Cl.³ F03B 7/00
U.S. Cl. 60—639 **5 Claims**

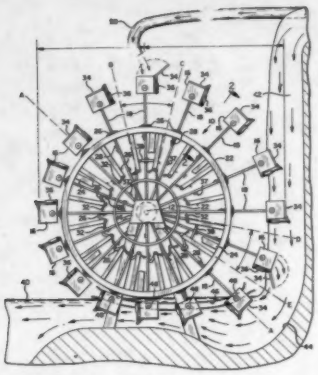
1. A propulsion system for a water wheel of the type having a plurality of pontoons, diametrically opposed ones of which are interconnected by common spokes that are slidably carried by the water wheel such that the pontoons can be selectively biased to position the pontoons on one side of the vertical center line of the water wheel at a first radius and the pontoons on the other side of the water wheel at a second radius which is less than said first radius, said system comprising:

(a) water course means for flowing a stream of water below the water wheel in a manner such that when pontoons positioned at said first radius enter said stream upon rotation of the water wheel they are floated radially inwardly on said water wheel to said second radius;

(b) chute means located upstream of said water course means for causing said stream of water to drop substantially vertically prior to passing below the water wheel; and

(c) turbulence directing means located at the intersection of said chute means and said water course means for direct-

ing the turbulence caused by said stream dropping through said chute means in a manner to urge said pontoons radially inward as they pass through said water course.

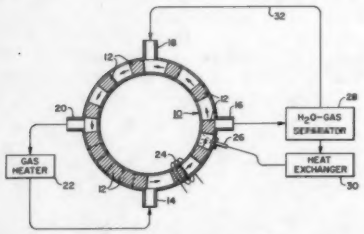


4,385,498

METHOD FOR CONVERTING ONE FORM OF ENERGY INTO ANOTHER FORM OF ENERGY

Sherwood L. Fawcett, Columbus, and James N. Anno, Cincinnati, both of Ohio, assignors to Battelle Development Corporation, Columbus, Ohio

Filed May 29, 1980, Ser. No. 154,264
Int. Cl.³ F02C 1/04
U.S. Cl. 60—650 11 Claims



1. In a method for converting one form of energy into another form of energy, the steps of isobarically heating a gas, adiabatically expanding said gas in a cell between bodies in a continuous-loop passageway while converting the heat energy of the gas into the kinetic energy of at least one moving body of a plurality of bodies in said passageway, converting the kinetic energy of the moving body into another form of energy, and approximately isothermally compressing said gas in said cell to a higher pressure.

4,385,499

MINIATURE CRYOGENIC COOLING SYSTEM WITH SPLIT-PHASE DUAL COMPRESSOR AND PHASE-SHIFTING DEVICE

Calvin K. Lam, Bedford, N.H., assignor to Kryovacs Scientific Corporation, Amherst, N.H.

Filed Mar. 16, 1982, Ser. No. 358,626
Int. Cl.³ F25B 9/00
U.S. Cl. 62—6 17 Claims

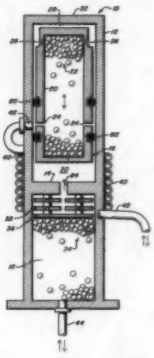
1. In a miniature cryogenic system having two compressors with two outlets, first and second conduits carrying a working fluid, each conduit connected to one of the outlets, said working fluid pressurized in a split-phase relationship by said compressors, wherein the improvement comprises a cold finger assembly including:

an elongate housing having a cryogenically cooled end and an internal abutment dividing said housing into first and second interior compartments, said first compartment extending from said cooled end to said abutment;

a displacer disposed slidingly within said first compartment for longitudinal reciprocating motion therein and creating a first working volume between said cooled end and said displacer and creating a second working volume between said displacer and said abutment;

a first regenerative bed disposed within said displacer;

a first inlet means located in said housing adapted for providing fluid communication between said first conduit and said first interior compartment;



first and second port means in said displacer providing fluid communication through said first regenerative bed between said first inlet means and said first working volume;

a second regenerative bed disposed within said second interior compartment;

a second inlet means in said housing providing fluid communication through said second regenerative bed between said second conduit means and said second working volume;

and means to develop transient cushioning overpressures in said first and second working volumes as said displacer reciprocates alternately toward said cooled end and toward said abutment under the push-pull influence of said split-phase working fluid flow from said compressors whereby cooling is effected in said first and in said second working volumes.

4,385,500

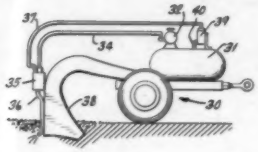
METHOD AND APPARATUS FOR THE ADIABATIC EXPANSION OF LIQUID ANHYDROUS AMMONIA

William L. Kjelgaard, and Paul M. Anderson, both of State College, Pa., assignors to Research Corporation, New York, N.Y.

Continuation of Ser. No. 86,345, Oct. 19, 1979, abandoned, which is a continuation of Ser. No. 840,845, Oct. 11, 1977, abandoned, which is a continuation-in-part of Ser. No. 716,203, Aug. 20, 1976, abandoned, which is a division of Ser. No. 506,516, Sep. 16, 1974, Pat. No. 3,978,681. This application Nov. 17, 1980, Ser. No. 207,771
Int. Cl.³ F17C 7/02
U.S. Cl. 62—51 18 Claims

1. An expansion chamber useful for the substantially adiabatic expansion of ambient-temperature pressurized anhydrous liquid ammonia to produce separate cold ambient pressure streams of gaseous anhydrous ammonia and liquid anhydrous

ammonia and application of said cold ambient pressure liquid anhydrous ammonia to fermentable plant material comprising a closed expansion chamber provided with two outlets, one outlet being useful for the withdrawal of cold gaseous anhydrous ammonia and the other outlet being useful for the withdrawal of cold anhydrous liquid ammonia and conduit means associated with said expansion chamber for introducing there-



into a stream of ambient-temperature, pressurized liquid anhydrous ammonia for expansion therein to produce therein cold gaseous ammonia and cold liquid ammonia at substantially ambient pressure, and a distribution conduit for uniformly applying the ambient pressure cold liquid anhydrous ammonia withdrawn from the expansion chamber to fermentable plant material.

4,385,501

HOT GAS COOLER

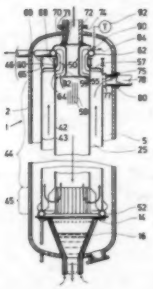
Georg Ziegler, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Sep. 15, 1981, Ser. No. 302,662

Claims priority, application Switzerland, Sep. 19, 1980, 7052/80

Int. Cl.³ G01K *13/00*

U.S. Cl. 62—129 **7 Claims**



1. A hot gas cooler comprising

a pressure vessel having a peripheral wall, an inlet spigot for a hot gas at an upper end, and an outlet at a lower end;

a cooling insert including a plurality of tubes secured together in seal tight manner for conveying a cooling medium therethrough, said insert being disposed within said vessel in spaced relation to said wall to define an enclosed annular gap therebetween and having an entry end in communication with said inlet spigot for receiving a flow of hot gas at an upper end and a gas-tight flow chamber for passage of the hot gas;

first means connecting said flow chamber adjacent said entry end with said gap to convey hot gas therebetween for compensating the pressure therebetween; and

second means for cooling the hot gas passing through said first means.

4,385,502

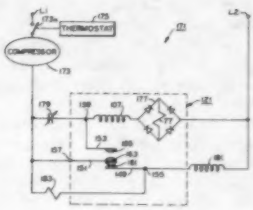
DEFROST CONTROL DEVICE AND METHOD OF OPERATING SUCH

Dann W. Denny; Ronald L. Hilty, and Paige W. Thompson, all of Morrison, Ill., assignors to General Electric Company, Fort Wayne, Ind.

Filed Aug. 28, 1981, Ser. No. 297,103

Int. Cl.³ F25D *21/06*

U.S. Cl. 62—155 **29 Claims**



26. A defrost control device comprising:

camming means for rotational movement;

gear train means operable generally in a pair of preselected speed modes for effecting the rotational movement of the camming means;

means actuated by said camming means during a part of the rotational movement thereof toward a displaced position and adapted for translating the gear train means from one of the preselected speed modes to the other of the preselected speed modes thereof; and

means operable upon the occurrence of a preselected atmosphere condition for releasably maintaining said translating means in the displaced position thereof to effect the operation of said gear train means in its other preselected speed mode.

4,385,503

AIR CONDITIONING APPARATUS FOR VEHICLE

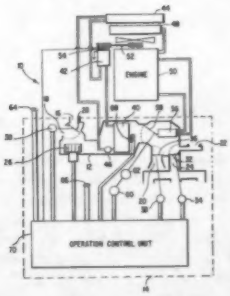
Eigi Okura, Konan, Japan, assignor to Diesel Kiki Company, Ltd., Tokyo, Japan

Filed Apr. 16, 1981, Ser. No. 254,724

Claims priority, application Japan, Apr. 21, 1980, 55-52770

Int. Cl.³ F25D *17/00*; F25B *29/00*

U.S. Cl. 62—180 **7 Claims**



1. An air conditioning apparatus for a vehicle, including an air flow duct communicating with a vehicle cabin, an outside/-recirculated air selector door means adapted to introduce outside air and recirculated air into the duct, and a cooler for cooling air in the duct, characterized by comprising:

set means for setting a command inside temperature for the vehicle cabin;

inside temperature sensor means for sensing an actual temperature inside the vehicle cabin;

outside temperature sensor means for sensing a temperature outside the vehicle cabin; and

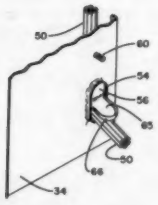
operation control means for controlling the air selector door means in response to outputs of the inside and outside temperature sensor means, the operation control means being constructed to, in a maximum cooling mode, introduce only outside air into the duct when an actual inside temperature is higher than an outside temperature, reduce the amount of outside air supply down to zero when the actual inside temperature drops to a level substantially equal to the outside temperature, cool off recirculated air introduced into the duct in place of outside air by activating the cooler, increase the amount of outside air from zero when the actual inside temperature drops further to a level higher than a command inside temperature by a predetermined degree until the amount of outside air reaches a predetermined upper limit, and cause the amount of outside air to settle at the upper limit when the actual inside temperature coincides with the command inside temperature.

4,385,504

ADJUSTABLE WIRE SEAL

Terrence J. Perrone, Rochester; Theodore S. Bolton, Liverpool, and Cosimo Caronna, Syracuse, all of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed May 18, 1981, Ser. No. 264,911
Int. Cl.³ F25D *23/12*
U.S. Cl. 62—259.1 **8 Claims**



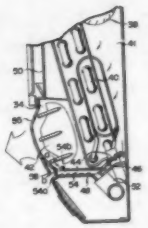
1. An air conditioning unit which comprises a compressor, evaporator and condenser forming a refrigeration circuit, a partition for dividing the unit into an outdoor section including the compressor, condenser and a condenser fan for circulating air in heat exchange relation with the condenser and an indoor section including the evaporator, an electrical controls area and an evaporator fan for circulating air in heat exchange relation with the evaporator, said partition defining a wire slot, wires extending through the wire slot and a wire seal slidably engaged to the partition, said wire seal including a body portion for blocking air flow through the wire slot and a flare portion extending through the slot for engaging the wires in the slot and the body portion defining a screw receiving slot and including a fastener extending through the slot to the partition to allow the wire seal to be slidably engaged to the partition.

4,385,505

AIR CONDITIONER

Kenji Umeza, Shizuoka; Masakichi Watanabe; Minoru Nakada, both of Fuji, and Toshiaki Hitosugi, Numazu, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 14, 1981, Ser. No. 254,126
Claims priority, application Japan, Apr. 15, 1980, 55-50003
Int. Cl.³ F25D *21/14*
U.S. Cl. 62—285 **3 Claims**



1. An air conditioner comprising:

a device body having a supply means, a suction means including a suction opening, and first and second air channels which are provided parallel to each other and which communicate at one end with said supply means and at the other end with said suction means;

blowing means including a blower set near said suction opening and housed in said device body for introducing air from the outside into said device body through said suction means, for separately passing air through said first and second air channels, and for exhausting it outside said device body through said supply means;

an evaporator disposed in said first air channel for cooling the air passing through said first air channel;

a first drain tray disposed below said evaporator for receiving dew drops formed on the evaporator and falling therefrom and thus for containing the resultant drain; and

a second drain tray disposed below said first drain tray for receiving dew drops formed on said first drain tray and falling therefrom and the drain overflowing said first drain tray;

said second air channel being defined between said first and second drain trays, the dew drops which fall from said first drain tray and the drain which overflows said first drain tray to said second drain tray being heated by the air passing through said second air channel, wherein said supply means further includes;

(a) first and second supply openings, said first supply opening being in communication with said first air channel and said second supply opening being in communication with said second air channel,

(b) a flow-direction adjusting grill provided in said first air channel near said first supply opening,

(c) connecting means for selectively connecting that portion of said second air channel which lies downstream of said first and second drain trays to that portion of said first air channel that lies downstream of said evaporator, and

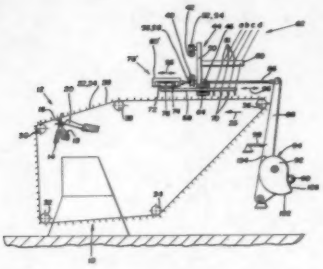
(d) a member which selectively closes said connecting means and said second supply opening, whereby when said connecting means is closed by said member said second air channel communicates with said second supply opening, and when said second supply opening is closed by said member said second air channel communicates with said first supply opening, said air passing through said second air channel being regulated in its direction by said flow-direction adjusting grill.

4,385,506

WEFT THREAD LAYING APPARATUS WITH TENSION STRIP

Kresimir Mista, Obertshausen, Fed. Rep. of Germany, assignor to Karl Mayer Textilmaschinenfabrk GmbH, Fed. Rep. of Germany

Filed Dec. 18, 1980, Ser. No. 217,902
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1979, 2951643
Int. Cl.³ D04B 23/06
U.S. Cl. 66—84 A 7 Claims



1. A weft thread laying apparatus for warp knitting machines comprising, in combination:

(a) a pair of endless transfer chain means generally disposed perpendicular to the needle bed of said warp knitting machine and proximate the ends thereof for continually carrying weft threads in a longitudinal direction from a pick-up area to a delivery area proximate said needle bed, said transfer chains being provided with a plurality of holding elements disposed thereon;

(b) carriage means disposed above said pair of transfer chain means in said pick-up area, said carriage means being movable back and forth perpendicular to said transfer chain means;

(c) thread guide means slidably disposed on said carriage means for laying a plurality of weft threads about said holding elements disposed on one of said pair of transfer chain means and then about the holding elements disposed on the other of said pair of transfer chain means in a continuing sequence; and

(d) means for moving said thread guide means in a longitudinal direction when said carriage means is proximate each said transfer chain means for permitting said weft threads to lay around said holding elements on said transfer chain means, said longitudinal moving means including:

(i) a flexible guide band extending beyond and generally transversely to said endless transfer chain means, said flexible guide band being coupled to said thread guide means,

(ii) steering means disposed on either end of said flexible guide band and coupled thereto,

(iii) displacement means coupled to said steering means for displacing said flexible guide band and said thread guide means,

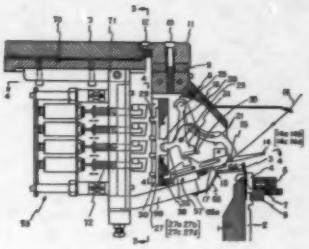
(iiii) said flexible guide band having at least one end thereof retained in said steering means by a spring means for maintaining band tension.

4,385,507

YARN FEEDING AND CHANGING APPARATUS FOR CIRCULAR KNITTING MACHINES

Masatoshi Sawazaki, Kobe, Japan, assignor to Precision Fukuhara Works, Ltd., Kobe, Japan

Filed Feb. 9, 1981, Ser. No. 232,511
Claims priority, application Japan, Sep. 4, 1980, 55-122570
Int. Cl.³ D04B 15/61
U.S. Cl. 66—140 R 10 Claims



1. Yarn feeding and changing apparatus for multi-feed circular knitting machines having a circle of needles, the apparatus having a series of yarn striper boxes positioned within the circle of needles in individual relation to the feeds of the machine with the boxes forming a circle thereof, and a remotely programmed yarn selector positioned within the circle of boxes, the circle of needles and the selector rotating in unison relative to the circle of boxes, the selector providing programs individual to individual ones of the boxes during the movement therebetween, individual ones of the boxes having therein a plurality of individual yarn fingers individually threaded with a like plurality of yarns and also having therein a like plurality of clamps and cutters individually related to the yarn fingers and to their yarns, the yarn fingers being movable between active and inactive positions wherein their yarns are placed into and out of feeding positions to the needles and wherein the clamps and cutters are operated upon to cut and to clamp the yarns, the selector having means to provide a selection individual to the yarn fingers in individual ones of the boxes to move selected ones of the yarn fingers between their active and inactive positions and to operate the individual clamps and cutters related to the selected yarn fingers to cut and to clamp the corresponding yarns.

4,385,508

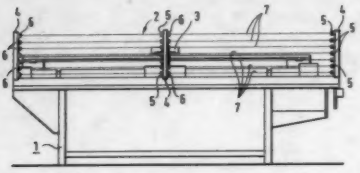
GUARD FOR THE ZONE OF MOVEMENT OF THE CARRIAGE OF A FLATBED KNITTING MACHINE

Reinhold Schimko, Aalen-Wasseralfingen, Fed. Rep. of Germany, assignor to Universal Maschinenfabrik Dr. Schieber GmbH, Westhausen, Fed. Rep. of Germany

Filed Sep. 25, 1980, Ser. No. 190,776
Claims priority, application Fed. Rep. of Germany, Oct. 1, 1979, 2939833
Int. Cl.³ D04B 35/10
U.S. Cl. 66—157 3 Claims

1. A guard for the zone of movement of the reciprocating carriage of a flatbed knitting machine comprising a light barrier extending parallel to the direction of movement of the carriage and disconnection means for bringing the machine to a standstill upon interruption of the light barrier, said light barrier comprising first light barrier forming means mounted at each end of said flatbed knitting machine and second light barrier forming means mounted on said carriage for movement therewith to form first and second light barrier portions between each of said first barrier forming means and said second

barrier forming means respectively and said disconnection means being responsive to only one of said light barrier portions at a time on the side of said carriage in the direction of movement of said carriage.



4,385,509

PERMUTATION LOCK

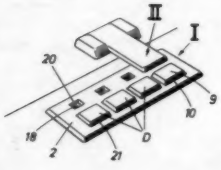
Peter Milles, Alberthofen, and Rudi Düringer, Wuppertal, both of Fed. Rep. of Germany, assignors to S. Franzen Söhne (GmbH & Co.), Solingen, Fed. Rep. of Germany

Filed Nov. 10, 1980, Ser. No. 205,137

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1979, 2947677; Oct. 11, 1980, 3038481

Int. Cl.³ E05B *37/02*

U.S. Cl. 70—304 **6 Claims**



1. In a permutation lock with an opening actuating handpiece and with a plurality of axle-mounted discs which bear symbols, which lie behind viewing windows in a front plate of the lock housing and lock in their individual angular positions, and adjacent thereto with locking sleeves which have engagement spaces for projections of a spring-biased blocking slide which is actuatable from the outside, the engagement spaces being opposite to the direction of movement of the projections of the blocking slide when the combination is properly set, the improvement wherein

said discs constitute separate discs,

a push button adjacent each of said viewing windows associated with each of said discs, respectively,

stepping means for actuating said separate discs, respectively, via said push buttons, respectively,

said lock housing has a lock wall formed with a recess and spaced therefrom has a partition wall formed with a first opening,

axle bearing means for rotatably mounting a pair of said discs and locking sleeves, respectively, to said lock housing, comprising,

a first stub shaft and a second stub shaft formed on opposite sides of said locking sleeve,

said disc is formed with a first recess and a third stub shaft,

said first stub shaft of said locking sleeve is disposed in said first recess of said disc,

a plate has a collar mounted in said recess of said lock wall, said plate is formed with a second opening,

said second stub shaft of said locking sleeve is disposed in said second opening,

a push-in plate is formed with a third opening and is disposed in said first opening of said partition wall, and

said third stub stub shaft of said disc is disposed in said third opening in said push-in plate,

a detent ratchet means has spring tongues mounted on said first-mentioned plate for axially resiliently holding said first and third stub shafts in said first recess and said third opening, respectively.

4,385,510

CYLINDER LOCKS

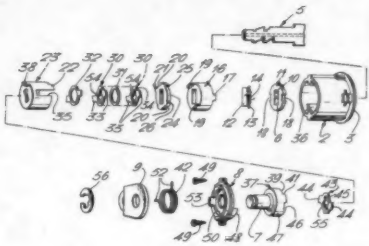
Barrie S. Harper, 27 Stubby La., Wednesfield, Wolverhampton, West Midlands, England (WV11 3NL)

Continuation of Ser. No. 129,805, Mar. 12, 1980, abandoned. This application Dec. 17, 1981, Ser. No. 331,719

Claims priority, application United Kingdom, Mar. 16, 1979, 7909291

Int. Cl.³ E05B *15/14, 29/02*

U.S. Cl. 70—364 R **16 Claims**



1. In a key-operable cylinder lock in which tumbler means projects from a barrel to obstruct rotation of the tumbler mechanism of the lock, and a key inserted into the tumbler mechanism engages with the tumbler means for withdrawal thereof by initial turning of the key in one direction from its position of insertion, the improvement wherein said tumbler means obstructs rotation of the barrel in the said one direction only, the said mechanism includes further tumbler means for obstructing rotational freedom of the mechanism in the opposite direction to said one direction, said further tumbler means being engaged by the inserted key for withdrawal thereof from its obstruction to said rotational freedom, and said tumbler mechanism includes means operative during the said initial turning of the key in said one direction to provide rotational slip relative to the barrel in said engagement of the key with said further tumbler means.

4,385,511

METHOD OF ROLLING METAL ARTICLES

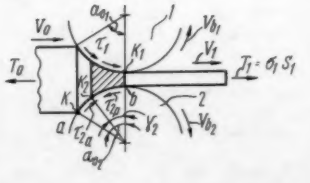
Vladimir N. Vydrin, 28, kv. 27, Chelyabinsk, U.S.S.R.

Filed Aug. 2, 1978, Ser. No. 930,408

Claims priority, application U.S.S.R., Aug. 12, 1977, 2507901

Int. Cl.³ B21B *39/08*

U.S. Cl. 72—205 **9 Claims**



1. A method of rolling metal articles comprising the follow-

ing operations: imparting drive and driven rolls rotation in opposite directions at a higher and a lower peripheral speed, respectively; applying to an article disposed between said rolls a tension at the entry and exit sections thereof; inducing the article to move at a speed which at the exit section thereof is equal to the peripheral speed of said drive work roll, due consideration being given to the possible changes in the speed of this latter roll; maintaining a ratio between the peripheral speeds of said work rolls which is less than the elongation of the article so that thereby the specified unit tension applied to the article at the exit section thereof is provided for with reference to the ultimate strength of the metal emerging from the rolls.

4,385,512

TANDEM ROLLING MILL TRAIN FOR METAL PLATE AND SHEET

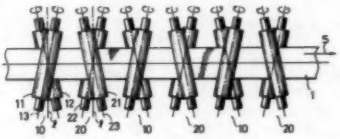
Hiromi Matsumoto; Yuji Uehori, both of Kitakyushu; Tetsuo Kajihara, and Tsuneo Nakano, both of Hiroshima, all of Japan, assignors to Nippon Steel Corporation and Mitsubishi Jukogyo Kabushiki Kaisha, both of Tokyo, Japan

Filed Jul. 7, 1981, Ser. No. 281,044

Claims priority, application Japan, Jul. 10, 1980, 55/93226

Int. Cl.³ B21B *13/02*

U.S. Cl. 72—234 **4 Claims**



1. In a tandem rolling mill train for rolling metal plate or sheet which comprises a plurality of crossed-roll type rolling mill stands each having a top and bottom work roll the axes of which lie in planes parallel to the surface of the piece being rolled and crossing substantially at the center thereof, the improvement which comprises at least two crossed-roll type rolling mill stands, the work rolls on one stand being respectively slanted in directions opposite to those on the other stand so that the widthwise shear deformation developed on the upstream stand is reduced by the widthwise shear deformation on the downstream stand.

4,385,513

FORMING PRESSES

Guido Salvagnini, Arzignano, Italy, assignor to Salvagnini Transferica S.p.A., Vicenza, Italy

Filed Jul. 23, 1980, Ser. No. 171,347

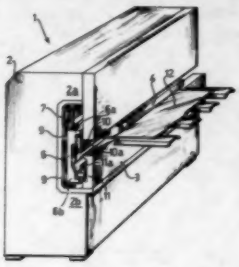
Claims priority, application Italy, Feb. 8, 1980, 24895 A/79

The portion of the term of this patent subsequent to Jan. 6, 1998, has been disclaimed.

Int. Cl.³ B21D *5/04*

U.S. Cl. 72—320 **2 Claims**

1. A forming press comprising a support structure having a C-shaped cross section with horizontal arms, a fixed lower counterblade, a blank holder upper counterblade, movable in the vertical direction, said counterblades being supported and extending longitudinally with regard to said support structure, a cutter block carriage movably guided in the vertical direction between the arms of said support structure, an upper bending blade and a lower bending blade mounted on said cutter carriage and having respective active parts cooperating with said counterblades for the downward and upward bending, respectively, of the edge of a plate firmly held by the counterblades themselves, and including the improvement in that at least one bending blade is longitudinally and rotatably mounted on a horizontal pivot supported by said cutter block carriage and extending longitudinally thereto, thrust elements being provided for angularly displacing said bending blade around said pivot toward and away from the respective counterblade, as well as adjustable positive stop elements between



said cutter block carriage and said bending blade for limiting the amplitude of angular displacement of the blade in both directions.

4,385,514

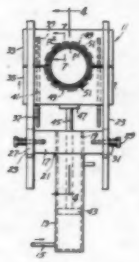
PIPE ASSEMBLY TOOL

Frank Sassak, Riverview, Mich., assignor to McInerney Spring & Wire Company, Grand Rapids, Mich.

Filed Jul. 8, 1981, Ser. No. 281,444

Int. Cl.³ B21D *39/04*

U.S. Cl. 72—416 **5 Claims**



1. A pipe assembly tool adapted to swedge or shrink a ring onto the overlap of a pair of telescoped pipes comprising:

a power cylinder assembly including a cylinder, a piston and piston rod projecting from said cylinder, and a pressure conduit adjacent one end of the cylinder;

a cross head secured to the rod end of said cylinder;

a pair of parallel spaced die supports adjacent their one ends, secured to said cross head, and at their other ends having a pair of opposed elongated guide slots;

a first die block spanning and projecting through said die supports and secured thereto;

a retractable second die block aligned with said first die block spanning and projecting through said supports and movable longitudinally thereof;

each of said die blocks having therein opposed semi-circular channels of semi-circular cross section;

said channels having a diameter less than the outside diameter of a ring and adapted to receive said ring upon the overlap of a pair of telescoped pipes extending between said dies;

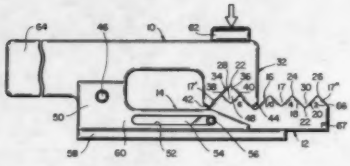
a pressure plate on said piston rod engageable with said second die when retracted;

pressurizing said cylinder assembly forcefully engaging said ring within and between said dies and swedging the ring onto the overlap of said pipes.

4,385,515
CALIBRATED CABLE CONNECTOR CRIMPING TOOL AND METHOD OF USE

William T. Link, Berkeley; Joel L. Fritsche, Redwood City, and Donald E. Crisp, Hayward, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Nov. 9, 1981, Ser. No. 319,817
Int. Cl.³ B21D 37/10
U.S. Cl. 72—416 12 Claims



1. A cable connector crimping tool for forming a calibrated crimp of selectably variable size in a cable splice connector positioned around a cable splice when the tool is struck, comprising:

(a) a first die member having a plurality of dies of select sizes linearly arranged in a sawtooth-like select sequence, each die comprising a V-groove having a first face and a second face, said faces being of equal length and being joined at the base point of the V-groove, each face extending out at an angle of 45° from the vertical axis of the V-groove at its base point and having an outer end, the outer end of the second face of each die intersecting the outer end of the first face of the adjacent die, the outer end of the first face of a first die in the sequence and the outer end of the second face of a last die in the sequence intersecting the outer ends of partial V-grooves juxtaposed thereto;

(b) a second die member having a single die comprising a V-groove of larger scale than the V-grooves of the first die member, having a first face and a second face, said faces being of equal length and being joined at the base point of the V-groove, each face extending out at an angle of 45° from the vertical axis of the V-groove at its base point and having an outer end; and

(c) a hinge joint operatively connecting the first die member and the second die member so that they can be engaged to form a calibrated diamond-shaped aperture into which the cable splice connector positioned around the cable splice may be placed prior to striking the tool, one die member having a die which is spatially fixed to define a fixed die member, the other die member having a moving means along which the die or dies may be slideably moved into a position allowing engagement of the die members to define a movable die member, the faces of the second die member surrounding one of the dies of the first die member by partially engaging the faces of the dies of the first die member adjacent to said one die, provided that the sequence of sizes of dies in the first die member is such that the outer ends of the faces of the second die never reach the base points of the V-grooves of the first die member, whose die faces said first die member partially engages when said first and second die members are engaged.

4,385,516
SYSTEM FOR THE DETECTION OF THE PRESENCE OF A PREDETERMINED CHEMICAL VAPOR DISTRIBUTED IN THE ATMOSPHERE

Malcolm R. Uffelman, 1808 Horseback Trail, Vienna, Va. 22180

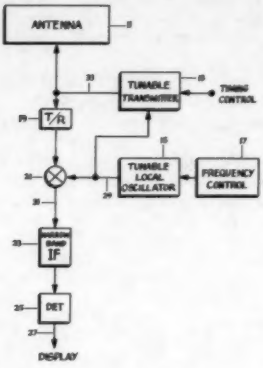
Filed Feb. 19, 1981, Ser. No. 236,061
Int. Cl.³ G01N 29/02
U.S. Cl. 73—24 7 Claims

1. A system for detecting the presence of a predetermined chemical vapor distributed in a region of the atmosphere comprising

tunable pulse signal transmitting means directed at said region of the atmosphere;

tunable single channel, narrowband receiving means directed at said region of the atmosphere;

control means coupled to said tunable transmitting means for tuning said transmitting means so as to emit a pulsed signal having a frequency Ft equal to the algebraic sum of predetermined frequency FA and offset frequency Fo;



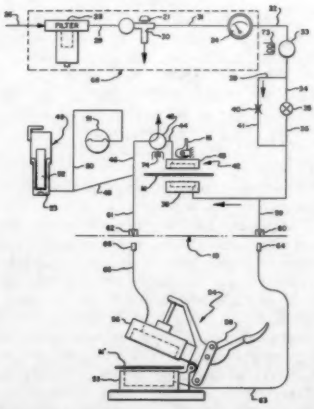
said control means further coupled to said tunable receiving means for tuning said receiving means so as to receive signals having frequencies only in the region around said predetermined frequency FA; and

display means coupled to said tunable receiving means for indicating the reception of said signals having frequencies in the region around said predetermined frequency FA.

4,385,517
METHOD AND APPARATUS FOR MEASURING THE PERMEABILITY OF A MATERIAL

Peter S. Sorce, Tonawanda, and Earl W. Clifford, Getzville, both of N.Y., assignors to The Aro Corporation, Bryan, Ohio

Filed Jun. 26, 1981, Ser. No. 277,681
Int. Cl.³ G01N 15/08
U.S. Cl. 73—38 10 Claims

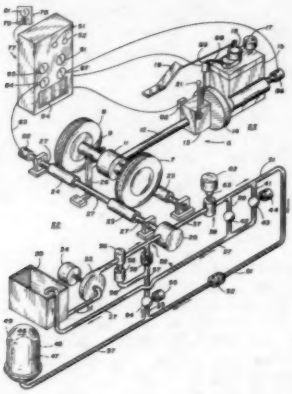


1. The method of measuring the permeability of a material to passage of a fluid, comprising the steps of:

supplying a flow of said fluid at a desired test pressure;

applying said flow to a known area of said material;
collecting such fluid as may pass through said material in an inflatable container;
sensing the pressure of such fluid in said container; and
indicating the end of a time interval needed to collect a desired volume of such collected fluid as a function of said sensed pressure.

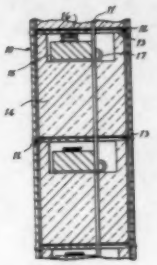
4,385,518
ROAD TEST SIMULATOR
Royal C. Rickett, 6228 Fennwood Ct., Sacramento, Calif. 95831
Filed Apr. 1, 1981, Ser. No. 249,959
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—117 **17 Claims**



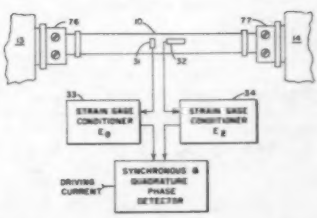
1. A road test simulator for a vehicle with a drive wheel coupled to an engine through a semi-automatic change-speed transmission comprising:
a. a hydraulic pump-motor;
b. means for temporarily coupling the drive wheel with said pump-motor;
c. a reservoir;
d. means including a hydraulic loop for interconnecting said pump-motor and said reservoir; and,
e. means in said loop on the outlet side of said pump-motor for imposing a continuously variable resistance to hydraulic flow through said loop to simulate the load imposed upon the transmission by accelerating the vehicle from a stopped condition, said load gradually decreasing from an initial high factor to allow the transmission to shift upwardly through its gears as the drive wheel speed increases.

4,385,519
WATER LEVEL SENSOR AND TEMPERATURE PROFILE DETECTOR
Richard D. Tokarz, West Richland, Wash., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Jan. 29, 1981, Ser. No. 229,423
Int. Cl.³ G01K *3/14, 5/42*; G01F *23/22*
U.S. Cl. 73—295 **2 Claims**

1. A temperature, profile detector for sensing temperatures in high temperature environments, comprising:
an elongated tubular first electrical conductor made of conductive, high temperature resistant material having substantial electrical resistivity;
an elongated second electrical conductor made of conductive, high temperature resistant material having substantial electrical resistivity, arranged within and electrically insulated from the first electrical conductor;
a plurality of gas-filled expandable electrical conductors electrically connected to the second electrical conductor and positioned within the tubular first electrical conductor in an orientation allowing the gas-filled expandable electrical conductors to electrically contact the tubular first electrical conductor to form an electrical connection between the first and second electrical conductors; and
a plurality of insulators for supporting the gas-filled expandable electric conductors and the second electrical conductor within the tubular first electrical conductor in an electrically insulated position.



4,385,520
STRAIN AND PHASE DETECTION FOR ROCK MATERIALS UNDER OSCILLATORY LOADING
Lucien Masse; William L. Medlin, both of Dallas, and James H. Sexton, Duncanville, all of Tex., assignors to Mobil Oil Corporation, New York, N.Y.
Filed May 1, 1981, Ser. No. 259,774
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—579 **2 Claims**



1. In a system for measuring resonance characteristics of rock material under an oscillatory driving force, the improvement comprising:
(a) means for producing an emf which is exactly in phase with said oscillatory driving force,
(b) means for producing a signal proportional to the longitudinal strain on said rock material under oscillatory loading,
(c) means for producing a signal proportional to the circumferential strain on said rock material under oscillatory loading, and
(d) means for determining the phase angles between said emf and said strain signals.

4,385,521

ULTRASONIC APPARATUS FOR SECTOR SCANNING

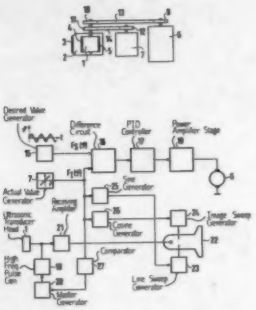
Jürgen Hagen; Walter Hetz; Gert Hetzel, all of Erlangen, and Dirk Schroeder, Eckental, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 29, 1980, Ser. No. 191,450

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1979, 2941876

Int. Cl.³ G01N *29/04*

U.S. Cl. 73—619 **7 Claims**



1. Ultrasonic scanning apparatus comprising: an ultrasonic transducer arrangement; drive means arranged to pivotably displace the transducer arrangement within a predetermined angular range of at least plus or minus forty angular degrees; an actual-value generator for supplying a linear signal dependent upon the angular position of the transducer arrangement within the said range; a desired-value generator for supplying a signal representing a desired angular position of the transducer arrangement within the said range, with said signal representing said desired angular position being linear within said range; and closed loop control means for controlling the drive means in dependence upon such signals from the actual-value and desired-value generators; wherein the actual-value and desired-value generators are adapted to supply respective actual-value and desired-value signals having the same or similar linear wave forms over a relatively large signal range corresponding to said predetermined angular range of at least plus or minus forty angular degrees.

4,385,522

PIT DEPTH GAUGE

John Mittleman, Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 28, 1981, Ser. No. 306,111

Int. Cl.³ G01B *5/28*; G01N *29/00*

U.S. Cl. 73—632 **8 Claims**

1. A pit depth gauge device for use with an ultrasonic probe including

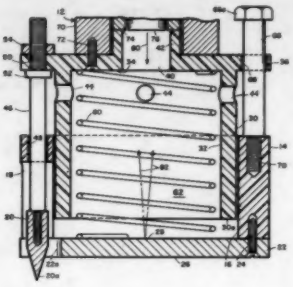
a transducer having a transmitting and receiving face, said device comprising:

a hollow, cup-shaped first member having a first end wall presenting an outer surface adapted to be pressed against an inspection surface and an inner, acoustically reflecting surface;

a hollow second member telescopically mounted for axial relative movements between said members and having a second end wall in which an acoustic energy port is defined, said second adapted to be mounted on said probe with said port in registration with said transducer face;

spring means, acting between said members, for normally urging said members to move outwardly of one another and for resiliently allowing said members to be pressed inwardly;

a stylus, having a sharp point, fixedly mounted on said second member and movable axially there with be-



tween retracted and extended positions relative to said outer surface of said first end wall for engagement in a pit in said inspection surface, whereby said transducer face is positioned at a distance from said reflecting surface that is related to the depth of said pit.

4,385,523

APPARATUS FOR TESTING THE WALLS OF VESSELS

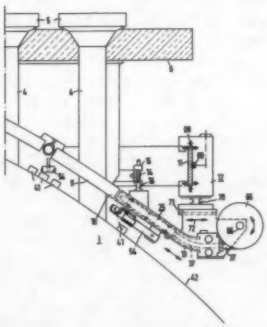
Georg Gugel, Kalchreuth, and Franz Huber, Erlangen, both of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Continuation of Ser. No. 242,180, Mar. 10, 1981, abandoned, which is a continuation of Ser. No. 95,080, Nov. 16, 1979, abandoned. This application Feb. 8, 1982, Ser. No. 346,882

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1978, 2849763

Int. Cl.³ G01N *29/04*

U.S. Cl. 73—640 **11 Claims**

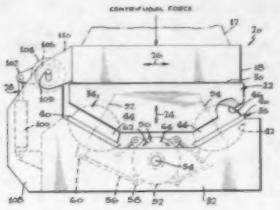


1. Apparatus for testing vessel walls having projections with a multiplicity of guide tracks extending among the projections for guiding a slide carrying a testing device, and carriage means for transposing the slide onto the individual guide tracks, the carriage means being movable on a transport track connecting the ends of the guide tracks, comprising a thrust hose rigid in tension and compression and guidable by the guide tracks, respectively, a drive for the thrust hose mounted on the carriage, said thrust hose connecting the slide to said drive, and a jib carried by the carriage and operatively associated with said drive, said jib being of such dimension as to accommodate the slide and the testing device and being movable for adjusting to the guide tracks.

4,385,524
COMPACT SHAKE MECHANISM

Klaus L. Cappel, Madison, Ala., assignor to Wyle Laboratories, El Segundo, Calif.

Filed Oct. 13, 1981, Ser. No. 310,800
Int. Cl.³ B06B 3/00; B04B 5/10; F16H 25/16
U.S. Cl. 73—663 7 Claims

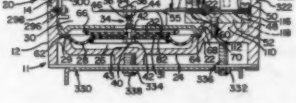


1. Apparatus for moving a driven member comprising:
a base having a base socket;
a driven member having a driven member socket facing said base socket;
a pad device having a base pad with a bearing surface defining part of a first circle and which is closely received in said base socket, and having a driven member pad with a bearing surface defining part of a second circle and which is closely received in said driven member socket, the centers of curvature of said circular bearing surfaces being spaced apart, and said pads having bearing faces which bear on each other and which allow the pads to slide on one another; and
means of pivoting said pad device whereby to move said driven member relative to said base.

4,385,525
STRAIN GAUGE PRESSURE TRANSDUCER

James W. Phillips, Michigan City, and Gregory Dirks, La Porte, both of Ind., assignors to Dwyer Instruments, Inc., Michigan City, Ind.

Filed Sep. 18, 1981, Ser. No. 303,628
Int. Cl.³ G01L 9/04
U.S. Cl. 73—720 10 Claims



7. In a differential pressure gauge comprising a housing having a pressure cavity defined thereby across which is mounted a flexible diaphragm separating high and low pressure chambers in the gauge, a leaf spring disposed in said housing in overlying relation to said diaphragm on one side of same and being anchored to said housing cantilever fashion at one end thereof, link means for connecting said diaphragm to said leaf spring, whereby deflection of the diaphragm under differential pressures in said chambers produces linear movement of said leaf spring other end, and means for separately connecting said high and low pressure chambers to sources of high and low pressure fluids, respectively,
the improvement wherein:
said housing comprises a housing member having a rear wall on the back side of same and being open on the front side of same,
said rear wall having a recess formed in same on the inside of same on the other side of the diaphragm defining with the diaphragm the gauge low pressure chamber,
said housing having a cover removably mounted on the front side of same forming with the diaphragm the gauge high pressure chamber,
said diaphragm having a circular periphery,
means for clamping said diaphragm periphery against said housing member about said recess for sealing said low pressure chamber from said high pressure chamber,
clamping means for clamping said leaf spring to said housing adjacent the diaphragm periphery for defining the live length of said leaf spring and a fulcrum about which said spring live length moves on said deflection of the diaphragam,
said leaf spring live length being deflection free when said high and lower pressure chambers are at equal atmospheric pressures,
said live length of said leaf spring having affixed to same a strain gauge comprising four square grid sensing elements connected in Wheatstone bridge fashion with two alternate grids extending longitudinally of said leaf spring and the other two grids extending transversely thereof,
said strain gauge being incorporated in an electronic circuit mounted in said housing and the sensing elements thereof being balanced when the diaphragm and leaf spring are free of deflection,
a circuit board fixedly mounted in said housing on said one side of the diaphragm and overlying and spaced from said leaf spring in substantial parallelism thereto,
said electronic circuit being mounted on said circuit board and including means for supplying a constant voltage to said strain gauge and means for amplifying the strain gauge signal generated by deflection of said leaf spring live length from the deflection free relation thereof to an output for effecting sensing of the action of the differential pressures acting on either side of the diaphragm.

4,385,526
FLOW METER

Eckhard Huthloff, Augsburg, Fed. Rep. of Germany, assignor to Bopp & Reuther GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

Filed Nov. 21, 1980, Ser. No. 209,289
Claims priority, application Fed. Rep. of Germany, Nov. 21, 1979, 2946944
Int. Cl.³ G01F 1/32
U.S. Cl. 73—861.22 9 Claims

1. In a flow meter, especially for measuring fluid flow passing through large-diameter tubular conduits, the tubular conduit having a longitudinal axis and a central section plane extending through said axis, a combination comprising a rod-shaped vortex generating body from which Karman vortices detach when fluid flow passes through the conduit, the frequency of vortices corresponding to the speed of the fluid flow through the conduit, said body having a longitudinal axis; a thin dividing wall extending through said central section plane and dividing said conduit into at least two vortex chambers,

said dividing wall extending in said conduit normal to the longitudinal axis of said body so that two substantially separated vortices are respectively generated in said chambers, which vortices are detached from said body without mutual interaction with each other; and feeler means for measuring the frequency of said Karman vortices.

4,385,527

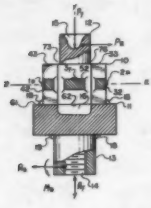
AIRCRAFT WEIGHING SYSTEMS

Seymour H. Raskin, 7333 Rustic Valley Dr., Dallas, Tex. 75248

Continuation of Ser. No. 37,134, May 8, 1979, abandoned. This application Jul. 15, 1981, Ser. No. 283,525

Int. Cl.³ G01L *1/22, 5/16*

U.S. Cl. 73—862.04 **4 Claims**



1. A load cell including: a substantially rectangular operator member having a central beam member, a pair of bearing beam members spaced from and parallel to said central beam member, the central portion of said central beam member being relatively thickened to provide an integral rigid load receiving portion, the central portion of each of said bearing beam members being thickened to provide a pair of integral rigid support portions, and a pair of end members connecting the outermost ends of the central beam member to the outermost ends of the bearing beam members, all of said beam portions other than said thickened portions being planar so that load forces and support forces are introduced into the operator member at locations spaced from the planar portions of said operator member; and a plurality of independent sets of strain gauges secured to said operator member and electrically connected in Wheatstone bridge circuits to measure vectors in a plurality of directions resulting from a force applied to said central portion of said central beam member.

4,385,528

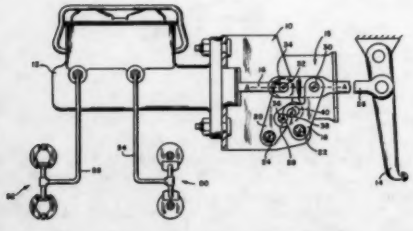
BRAKE PEDAL LINKAGE ASSEMBLY

Edward M. Pauwels, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Oct. 8, 1980, Ser. No. 195,036

Int. Cl.³ G05G *1/04, 1/14*

U.S. Cl. 74—516 **7 Claims**



1. A brake linkage for connecting a brake pedal assembly with a master cylinder assembly, the brake pedal assembly and the master cylinder assembly being carried by a frame, said brake linkage comprising a first lever coupled to said frame and a connecting member coupled to said brake pedal assembly and said first lever, a second lever coupled to said frame and said master cylinder, and a link extending between said first and second levers, said connecting member defining a lost-motion connection with said master cylinder assembly, said link defining a lost-motion connection with one of said first and second levers, said connecting member being movable during an initial brake application to pivot said first lever relative to said frame, whereby said first lever imparts movement to said link and said second lever imparts movement to said master cylinder assembly at a rate greater than the movement of said connecting member, said connecting member being movable during an intermediate brake application to pivot said first lever relative to said frame, whereby said first lever imparts movement to said link and said second lever to impart movement to said master cylinder at a rate less than the movement of said brake pedal assembly, said connecting member abutting said master cylinder assembly during a final brake application to cause said connecting member and said master cylinder assembly to move at substantially the same rate, and said connecting member being operatively connected, with both said second lever and said master cylinder assembly via a single pin.

4,385,529

FOOT-OPERATED PARKING BRAKE LEVER ASSEMBLY

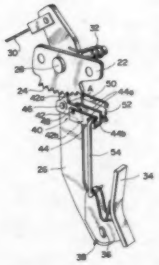
Takeshi Ejiri, Tanashi; Seiichi Tanaka, Higashi-yamato; Teruaki Kasai, Yokohama; Masao Komatsuzaki, Yokohama, and Satoru Masuda, Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd. and Otsuka Koki Co., Ltd., both of Yokohama, Japan

Filed Sep. 22, 1980, Ser. No. 189,247

Claims priority, application Japan, Sep. 20, 1979, 54-121687

Int. Cl.³ G05G *5/06, 1/14*

U.S. Cl. 74—535 **8 Claims**



1. A foot-operated parking brake lever assembly comprising:

a stationary support;

a brake lever pivotally mounted on said support and having a brake setting cable attached thereto;

brake lever biasing means connected to said brake lever for urging said brake lever toward a brake releasing position thereof;

a series of ratchet teeth formed in a peripheral portion of said support;

a pawl for selectively retaining said brake lever in brake setting positions thereof against repivoting to the brake releasing position, said pawl having a first pawl section and a second pawl section, said first pawl section being pivotally mounted on said brake lever and having a finger for selectively engaging said ratchet teeth, said second pawl section being pivotally mounted on said first pawl section, said pawl further having means for limiting the rotational movement of said second pawl section relative to said first pawl section;

a pedal pivotally mounted on said brake lever and biased toward a predetermined rest position thereof;

a connecting member interconnecting said second pawl section and said pedal in such a manner that said second pawl section is rotated relative to said first pawl section by rotating said pedal away from said rest position; and

pawl biasing means connected to said second pawl section for urging said second pawl section in a direction to cause said finger of said first pawl section to engage said ratchet teeth when said second pawl section is in a rotational position subjected to the limiting action by said limiting means and for urging said second pawl section in a direction to cause said finger of said first pawl section to be disengaged from said ratchet teeth when said second pawl section is in a rotational position free from the limiting action by said limiting means,

whereby said finger of said first pawl section is disengaged from said ratchet teeth only by simultaneously depressing said brake lever and rotating said pedal away from said rest position.

4,385,530

TRANSMISSION FOR DRIVING A STRETCH-REDUCING ROLLING MILL

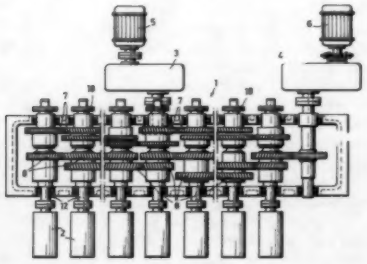
Helmut Holthoff, Dusseldorf, Fed. Rep. of Germany, assignor to Kocks Technik GmbH & Company, Hilden, Fed. Rep. of Germany

Filed Dec. 8, 1980, Ser. No. 214,469

Claims priority, application Fed. Rep. of Germany, Jan. 16, 1980, 3001343

Int. Cl.³ F16H *37/06*; B21B *35/00*

U.S. Cl. 74—675 **9 Claims**



1. A transmission for driving multiple successive roll stands of a stretch reducing rolling mill comprising a transmission housing, outwardly extending output shafts extending out of one side of said housing for driving the rolls of each of said successive rolling stands arranged one after another in the rolling direction, said output shafts equalling in number the rolling stands, a basic spur gear speed transmission train in said housing, an auxiliary spur gear speed transmission train in said housing, and a spur wheel differential transmission stage for each of at least some of the output shafts, the spur gears forming each differential transmission stage being housed within a corresponding support sleeve carrying spur wheels forming part of one of said transmission trains, a safety coupling being provided for each such differential transmission stage at the outside of the transmission housing remote from the output shafts.

4,385,531

HYDRAULIC CIRCUIT SYSTEM FOR AUTOMATIC TRANSMISSION

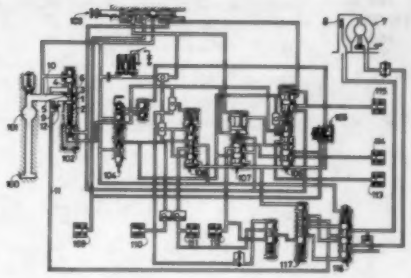
Kouzi Kobayashi, Toyota, and Keizo Kobayashi, Anjo, both of Japan, assignors to Aisin-Warner Kabushiki Kaisha, Anjo, Japan

Filed Aug. 22, 1980, Ser. No. 180,429

Claims priority, application Japan, Aug. 30, 1979, 54-111261

Int. Cl.³ B60K *21/02, 41/12*

U.S. Cl. 74—869 **2 Claims**



1. A hydraulic circuit apparatus for an automatic transmission including a plurality of friction engaging elements and a planetary gear set, said hydraulic circuit apparatus including:

a pressurized hydraulic fluid source;

a regulator valve connected to said source via first fluid conduit means;

hydraulic power cylinders connected to said friction engaging elements and in fluid communication with a regulated fluid output of said regulator valve via second fluid conduit means;

hydraulic control means including a governor valve, a throttle valve and at least one shift valve, said hydraulic control means being in fluid communication with said regulated fluid output of said regulator valve via third fluid conduit means;

fourth fluid conduit means connected between said regulator valve and said torque converter for providing fluid flow therebetween;

valve means associated with said regulator valve for selectively supplying fluid from said regulator valve to said fourth fluid conduit means when said fluid source provides fluid pressure exceeding a predetermined value;

fifth bypass fluid conduit means connected between said first and fourth fluid conduit means; and

restriction means in said fifth bypass fluid conduit means, said restriction means being sized for permitting a predetermined fluid flow rate therethrough at a fluid pressure below said predetermined value.

4,385,532

SHARPENING DEVICE FOR A BACK-SHARPENED SAW CHAIN OF A MOTOR CHAIN SAW

Hans Dolata, Waiblingen; Werner Meyle, Murr; Hans-Georg Kaiser, Köngen; Gerhard Odenwald, and Günther Weyda, both of Waiblingen, all of Fed. Rep. of Germany, assignors to Andreas Stihl, Waiblingen, Fed. Rep. of Germany

Filed Oct. 6, 1980, Ser. No. 193,897

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1979, 2940430

Int. Cl.³ B23D *63/16*

U.S. Cl. 76—25 A **16 Claims**

1. A sharpening device for the saw chain of a motor chain saw having a housing for the motor of said chain saw, and a guide bar for said saw chain, said guide bar having one end connected to said housing, with the other end being a free

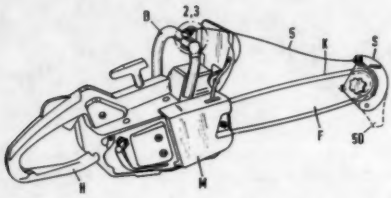
reversing end, with a reversing radius, for reversing the direction of travel of said saw chain, said sharpening device comprising:

a sharpening element wich is arranged in the region of said free reversing end and is curved approximately concavely with respect to the center or axis of rotation of said reversing radius;

a holding device, for said sharpening element, connected to said guide bar and including at least an adjustment lever, which is pivotable toward said saw chain and upon which said sharpening element is seated;

a screw drive operatively connected to said adjustment lever and cooperating therewith, said screw drive determining the feed path of said sharpening element;

an actuating handle operatively connected to said housing on a side thereof remote from said free reversing end, said actuation handle also being operatively connected to said screw drive for adjustment of said sharpening element,



said housing including a forward hand grip, and said actuating handle being connected within the grasping range of said hand grip, said actuating handle being a rotary knob; and

said screw drive being a threaded bolt, and including: a yieldable shaft for effecting connection of said rotary knob to said threaded bolt; a support plate forming part of said holding device, said adjustment lever being pivotably mounted to said support plate, which in turn is connected to said guide bar, said support plate being provided with an extension; a female piece seated in said extension for receiving said threaded bolt in such a way that said bolt has a free end section remote from said rotary knob, said free end section pressing against said adjustment lever; and a spring operatively connected to said adjustment lever for biasing same, said spring endeavoring to pivot said adjustment lever, together with said sharpening element, in a radial direction against said axis of rotation of said reversing radius.

4,385,533

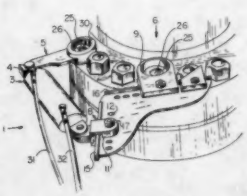
UNIVERSAL REACTION PLATE

Bobby W. Collins, P.O. Box 1366, Harvey, La. 70059

Filed Aug. 28, 1981, Ser. No. 297,143

Int. Cl.³ B25B *13/46*

U.S. Cl. 81—57.39 **20 Claims**



1. A reaction plate assembly for use in a hydraulic torque wrench which comprises:

(a) a reaction plate having a perimeter section provided with a series of spaced apart bolt openings and an adjacent perimeter section provided with at least one ring nut bolt opening;

(b) a clevis mounted at one end by attaching means to one of said series of bolt openings, said clevis provided with an attaching member for being pivotly mountable at its opposite end to one end of a hydraulic cylinder; and

(c) a nut ring mounted at one end by a nut ring attaching means to said adjacent perimeter section and provided with a nut opening positionable past said adjacent perimeter section and having a cross-sectional shape to matingly slip over a nut head.

4,385,534

ADJUSTABLE SOCKET

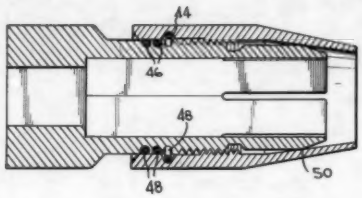
Carl R. Nichols, R.D. #2, Campbell, N.Y. 14821

Continuation of Ser. No. 969,853, Dec. 15, 1978, abandoned.

This application Aug. 27, 1980, Ser. No. 181,907

Int. Cl.³ B25B *13/32*

U.S. Cl. 81—114 **1 Claim**



1. An adjustable socket comprising

a body having a driven end with an opening therein for receiving a driving tool, a midsection, and a plurality of spaced resilient jaws extending from said midsection in substantially parallel relation with the longitudinal axis of said body and terminating at ends defining a driven end opening for receiving hardware to be driven, said body being integrally formed and having a plurality of circumferential external grooves therein;

a cam sleeve disposed around said body to be axially movable therealong and having an internal circumferential detent groove therein and a tapered camming surface abutting said jaws whereby axial movement of said cam sleeve along said body varies the spacing between said jaws to vary the size of said driving end opening; and

a plurality of spring snap rings each positioned in a compressed condition in one of said external grooves in said body to engage said internal groove in said cam sleeve when said internal groove is aligned with each of said external grooves as said cam sleeve is axially moved along said body to positively position said jaws for various size driving end openings.

4,385,535

WELDED SEAL REMOVAL

Joseph A. Tedder, East Hartford, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Nov. 28, 1980, Ser. No. 211,143

Int. Cl.³ B23B *5/00*

U.S. Cl. 82—4 R **5 Claims**

3. An apparatus for the control of a cutter tool bit, including,

a seal-weld bead forming a union with the edges of two container surfaces which it is desired to remove and replace,

a first housing mounted in fixed relationship to the seal-weld bead,

a second housing structure mounted within the first housing structure and movable the length of the seal-weld bead,

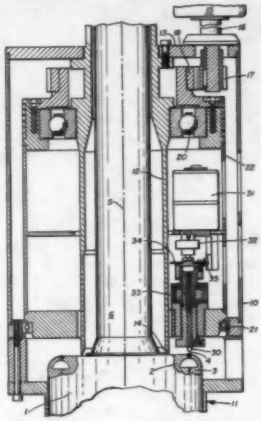
a first motor mounted on the first housing structure and

connected to travel the second housing structure along the seal-weld bead length,

a second motor mounted on the second housing,

a cutter tool bit mounted on the second housing and provided a vertical path along which the bit is movable downward to engage the seal-weld bead,

a connection between the second motor and the bit which translates the rotation of the motor into vertical movement of the bit along its vertical path,



means for sensing the rotation of the second motor and processing the signals of rotation into vertical bit movement,

and means for controlling the second motor in response to the processed signals of rotation to predetermine the vertical distance the bit moves in machining the seal material as the first motor travels the bit the length of the seal bead.

4,385,536

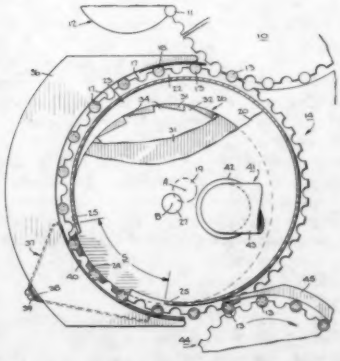
APPARATUS FOR FORMING AN AERATION GROOVE IN A FILTER

Floyd V. Hall, Durham, N.C., assignor to Liggett Group Inc., Montvale, N.J.

Continuation of Ser. No. 135,120, Mar. 28, 1980, abandoned. This application Mar. 29, 1982, Ser. No. 362,846

Int. Cl.³ A24C *5/50*; B26D *3/06*

U.S. Cl. 82—52 **9 Claims**



1. In an apparatus for forming an aeration groove in a filter, the combination comprising

a rotatable filter plug drum having a plurality of circumferentially spaced grooves disposed in the outer surface for conveying a series of filter plugs including a body of entrainment type fibrous filter material and a layer of plug wrap paper circumferentially about the body, said drum having at least one annular slot in the inside surface thereof communicating with said grooves and the interior of said drum to permit a filter plug to project therethrough;

a forming means within said drum and aligned with said slot at said station for forming at least one peripheral groove in each filter plug conveyed through said station, said groove in the filter plug extending through the plug wrap paper to communicate the exterior of the filter plug with the body of filter material; and

means for rolling the filter plug through said grooving station.

4,385,537

APPARATUS FOR ENGAGING AND TRANSPORTING DISCRETE SHEETS OF PAPER OR THE LIKE

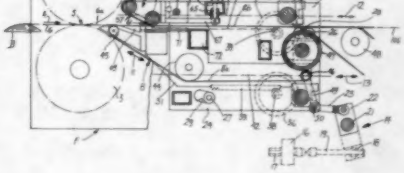
Wolfram Wolf, Bilsen, Fed. Rep. of Germany, assignor to E.C.H. Will (GmbH & Co.), Hamburg, Fed. Rep. of Germany

Filed May 12, 1981, Ser. No. 263,075

Claims priority, application Fed. Rep. of Germany, May 24, 1980, 3019973

Int. Cl.³ B26D *1/62*; B65H *35/08*

U.S. Cl. 83—100 **19 Claims**



1. In a machine for converting a running web of paper or the like into a succession of discrete sheets wherein the web is transported lengthwise along a first path and its leader is severed at a severing station to yield a succession of discrete sheets, the combination of an apparatus for engaging and transporting successive sheets in a direction away from said station and along a second path, comprising a sheet catcher assembly including first sheet-engaging conveyor means at one side and second sheet-engaging conveyor means at the other side of said second path; means for adjusting said catcher assembly relative to said station; means for adjusting said first conveyor means relative to said second conveyor means; and means for adjusting said second conveyor means relative to said first conveyor means.

4,385,538

SHEARING DEVICE FOR CUTTING BAR-SHAPED STOCK SUCH AS ROLLED STEEL BILLETS

Hans Bieri, Pfäffikon, and Karl Rimmele, Schmerikon, both of Switzerland, assignors to Mecapec S.A., Switzerland

Filed Feb. 24, 1981, Ser. No. 237,847

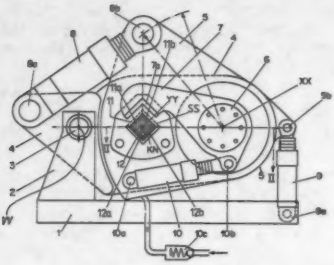
Claims priority, application Fed. Rep. of Germany, Feb. 26, 1980, 3007099; Apr. 29, 1980, 3016528

Int. Cl.³ B23D *15/02*; B26D *3/16, 7/02*

U.S. Cl. 83—169 **20 Claims**

1. Apparatus for cutting stock such as steel billets, comprising a machine frame, a cutting blade support assembly including a first, upper cutting blade support and a second, lower

cutting blade support, pivotally connected to each other about a working bearing defining a first pivot axis and each having at least one cutting blade, a support member rigidly connected to said machine frame, said cutting blade support assembly being pivotally connected to a free end of said support member about a second pivot axis, first power drive means connected to said machine frame and to said cutting blade support assembly for pivoting said cutting blade support assembly about said second pivot axis, second power drive means connected to one of said



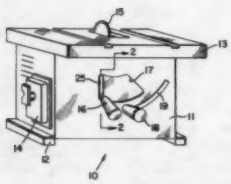
first and second cutting blade supports for pivoting said first and said second cutting blade supports relative to each other about said first pivot axis to effect a cutting movement, a hold-down member connected to said cutting blade support assembly and pivotally mounted about said first pivot axis, and third power drive means connected to said hold-down member and to one of said first or second cutting blade supports for pivoting said hold-down member about said first pivot axis relative to the one of said first or second cutting blade supports.

4,385,539

ARTICULATED DUST COVER MEANS FOR TABLE SAW OR OTHER POWER-DRIVEN APPARATUS

Carl E. Meyerhoefer, Little Neck, and Carl H. Meyerhoefer, Dix Hills, both of N.Y., assignors to Black & Decker Inc., Newark, Del.

Filed Aug. 14, 1981, Ser. No. 292,434
Int. Cl.³ B27B *5/24*
U.S. Cl. 83—473 **11 Claims**



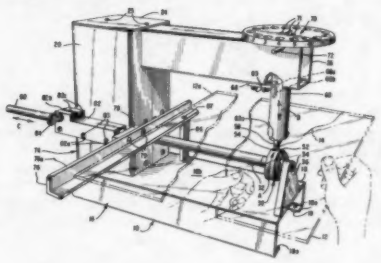
1. In combination with a power-operated saw having a housing provided with a table, a motor-driven saw blade projecting above the table, means including an elevation control lever for raising and lowering the blade with respect to the table to adjust the depth of cut, bevel control means for tilting the saw blade with respect to the table, the elevation control lever being movable in all positions of the bevel control means, whereby the elevation control lever has a relatively large traverse, the housing having a front panel with an opening formed therein through which the elevation control lever projects, the opening being of sufficient size and shape to accommodate the relatively large traverse of the elevation control lever, an articulated cover means for the opening in the front panel of the housing, said cover means comprising a first cover member having a conjoint movement with the bevel control means, the first cover member being disposed substantially flush against the inside of the front panel and substantially covering the opening in the front panel in all positions of the bevel control means, the first cover member having an elongated opening therein through which the elevation control lever extends, and a second cover member carried by the elevation control lever and disposed substantially flush against the first cover member, the second cover member substantially covering the elongated opening in the first cover member as the elevation control lever is moved within the elongated opening in the first cover member.

4,385,540

APPARATUS FOR SCORING GLASS SHEETS

William J. Dieter, 25 W 330 Hobson, Naperville, Ill. 60540

Filed Apr. 27, 1981, Ser. No. 257,520
Int. Cl.³ C03B *33/02*; B26D *3/08*
U.S. Cl. 83—886 **14 Claims**



1. Apparatus for scoring glass sheets comprising:

a rotary drive roll having a tire of resilient material for drivingly engaging the underside of and supporting a sheet of glass to be cut;

a frame and bearing means for supporting a horizontal drive shaft on which said drive roll is mounted for turning therewith, said frame including an upstanding leg at an end of said shaft opposite said drive roll and an arm extending outwardly of said leg spaced parallel to and above said shaft for supporting scoring means above said drive roll;

scoring means above said drive roll adjustable to move toward and away from said tire for scoring engagement with the upper surface of said sheet of glass when said sheet is driven to move therebeneath by rotation of said drive roll; and

means for adjusting the position of said scoring means relative to said drive roll and maintaining a selected position after adjustment while said sheet of glass is being scored,

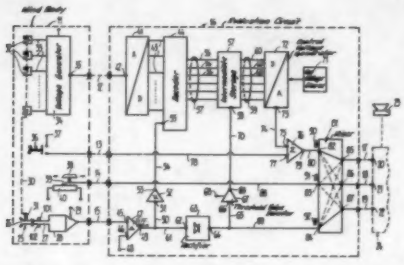
said scoring means including a rotating scoring wheel mounted adjacent a lower end of a mandrel of said adjusting means, said mandrel supported for vertical movement on said arm adjacent an outer end,

said mandrel of said adjusting means being mounted for vertical movement on said arm, said adjusting means including key means for preventing rotation of said mandrel relative to said arm and a hand wheel threadedly engaged with an upper end of said mandrel for moving said mandrel toward or away from said drive roll upon rotation of said hand wheel.

4,385,541
OPERATING APPARATUS USED AT AN ELECTRONIC INSTRUMENT PROVIDED WITH AT LEAST ONE SYNTHESIZER

Walter Müller, Binningen; Urs P. Studer, Riehen, and Harald Blobel, Bottmingen, all of Switzerland, assignors to Walter Müller, Binningen, Switzerland

Filed Feb. 22, 1982, Ser. No. 351,129
Claims priority, application Switzerland, Feb. 25, 1981, 1260/81
Int. Cl.³ G10H *1/03;* G10D *7/12*
U.S. Cl. 84—1.14 9 Claims

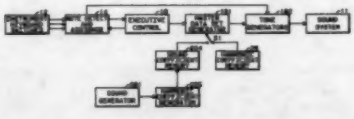


1. An operating apparatus for an electronic musical instrument provided with at least one synthesizer, comprising:
- a wind body responsive means controlling the synthesizer as a function of their response;
- a displaceable mouthpiece arranged at said wind body and movable along a predetermined displacement path;
- said mouthpiece being provided with a single blowing and suction opening;
- said responsive means comprising a static pressure converter;
- said blowing and suction opening flow communicating with said static pressure converter;
- whereby said pressure converter can detect an air current induced by a human blowing or sucking on said opening;
- said responsive means further including position sensors arranged in a row along said displacement path of the mouthpiece;
- a component displaceable together with said mouthpiece;
- said position sensors cooperating with said component;
- an evaluation circuit;
- said static pressure converter and said position sensors being connected to said evaluation circuit; and
- said evaluation circuit generating control voltages for the synthesizer as a function of the response of said static pressure converter and said position sensors.

4,385,542
ACOUSTIC TONE SYNTHESIZER FOR AN ELECTRONIC MUSICAL INSTRUMENT

Ralph Deutsch, Sherman Oaks, and Leslie J. Deutsch, Sepulveda, both of Calif., assignors to Kawai Musical Instrument Mfg. Co., Ltd., Hamamatsu, Japan

Filed Sep. 22, 1981, Ser. No. 304,535
Int. Cl.³ G10H *1/08, 7/00*
U.S. Cl. 84—1.23 21 Claims

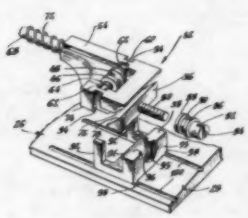


1. In a keyboard musical instrument having a number of tone generators, in which a plurality of data words corresponds to the amplitudes of the points defining the waveform of a musical tone are computed and transferred sequentially to a digital-to-analog converter to be converted into musical waveshapes, apparatus for generating tones imitative of a musical signal tone comprising;
- a coefficient memory for storing a set of harmonic coefficient values;
- a sound generator for generating said musical signal tone,
- a harmonic coefficient computing means responsive to said musical signal tone wherein a said set of harmonic coefficient values are created,
- a first addressing means whereby the set of harmonic coefficient values created by said harmonic coefficient computing means is stored in said coefficient memory,
- a means for computing, responsive to the set of harmonic coefficient values stored in said coefficient memory, whereby said plurality of data words corresponding to the amplitudes of points defining the waveform of a musical tone are computed, and
- means for producing musical waveshapes from said plurality of data words thereby generating said tones which are imitative of said musical signal tone.

4,385,543
ADJUSTABLE BRIDGE FOR A STRINGED MUSICAL INSTRUMENT

Timothy Shaw, and Charles T. Burge, both of Kalamazoo, Mich., assignors to Norlin Industries, Inc., White Plains, N.Y.

Filed Jun. 22, 1981, Ser. No. 276,424
Int. Cl.³ G10D *3/04*
U.S. Cl. 84—298 12 Claims



1. A bridge for a stringed musical instrument comprising:
- a bridge base:
- a bridge saddle for each string of the instrument:
- means for mounting each of said bridge saddles in a manner such that it may be independently moved up and down relative to said bridge base: and
- wedge shaped means adapted to coact with a surface of each of said means for mounting to control the height of the corresponding bridge saddle.

4,385,544
DRUMSTICK AND METHOD OF MANUFACTURE

Ronald E. Heiskell, 2632 Mallard Ct., Union City, Calif. 94587

Filed Feb. 5, 1981, Ser. No. 231,860
Int. Cl.³ G10D *13/02*
U.S. Cl. 84—422 S 8 Claims

1. A drumstick comprising:
- a handle portion consisting of a cylindrical tube of resin

impregnated woven fabric, said tube having an internal cylindrical cavity of known diameter;

a shank portion consisting of a second cylindrical tube of said resin impregnated woven fabric, the external diameter of said second tube being approximately the same as said first tube internal cavity, said second tube having an internal cylindrical cavity of known diameter, a portion of which is drilled to a larger diameter than said second known diameter, the diameter and length of said drilled portion being selected to control the center of gravity of said drumstick;

said shank portion and said handle portion being telescopically joined a preselected depth to further control said center of gravity and adhesively fixed together;

said handle portion and said shank portion being machined to form a continuous, smooth cone from the telescopically joined portion to a point before the end of said shank portion and to form a short cylindrical portion to said end; and

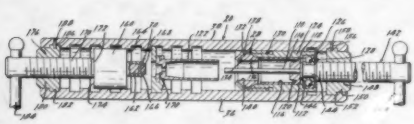
a tip adhesively secured to said short cylindrical portion.

4,385,545

RELOADING DEVICE FOR METALLIC FIREARM CARTRIDGES

Morris J. Duer, 8501 Peachwood Dr., Centerville, Ohio 45459

Filed Sep. 8, 1981, Ser. No. 299,811
Int. Cl.³ F42B *33/02*
U.S. Cl. 86—28 **18 Claims**



1. A reloading device for metallic firearm cartridges, said reloading device comprising, in combination, a housing including a base portion and a cover portion, said base and cover portions cooperating to define a longitudinally extending passageway open at each end, said base and cover portions also cooperating to define a plurality of annular grooves spaced longitudinally of the passageway defined by said base and cover portions, means hingedly connecting said base portion and said cover portion along one side thereof, means for latching said base and cover portions tightly together along the other side thereof, cartridge holder means insertable in the annular grooves defined by said housing, cartridge resizing means insertable in the passageway defined by said housing and supportable by said housing, and means for manually advancing and retracting said resizing tool in the passageway defined by said housing.

4,385,546

CARTRIDGE RELOADING DIES

Richard J. Lee, 3146 Kettle Moraine Rd., Hartford, Wis. 53027

Filed Oct. 13, 1981, Ser. No. 310,558
Int. Cl.³ F42B *33/10*
U.S. Cl. 86—36 **11 Claims**

1. A device for use in ammunition casing reloading apparatus comprising:

a body having a bore for receiving a casing,

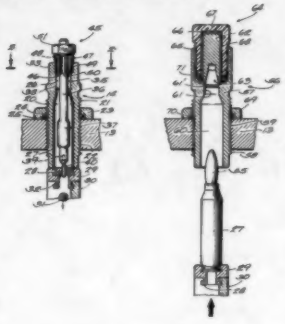
a decapper rod for being held in the bore coaxially therewith, said rod having a pin extending from one end for driving a cap from a casing when said casing is forced a sufficient distance into the bore,

clamping means having means for fixedly engaging with said body and for frictionally gripping said rod in a region remote from said pin such that if more than a predetermined force is imposed on said rod by said casing said rod will slip to avoid being damaged.

7. A bullet seater die for use in ammunition casing reloading apparatus, comprising:

a die having a bore into whose one end a casing having a bullet thereon may be forced incidental to performing a bullet seating operation,

an externally threaded adjusting screw means for screwing into said body coaxially to said bore,



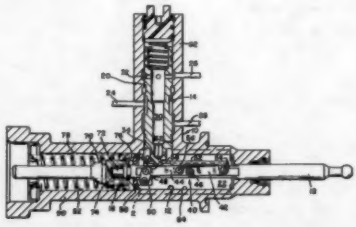
a bullet seater element arranged in said die for moving axially and shifting laterally by a small amount, said element having a recess in an end thereof that is presented toward said one end of the bore, said recess being shaped such that it will cause said element to shift laterally to align said element with said bullet when a bullet on a casing is advanced into the bore, said element being adapted to shift axially and be stopped by said screw means to thereby seat said bullet in the casing.

4,385,547

HYDRAULIC BRAKE BOOSTER

Arthur K. Brown, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Feb. 12, 1981, Ser. No. 233,712
Int. Cl.³ F15B *9/10*
U.S. Cl. 91—384 **2 Claims**



1. In a hydraulic brake booster, a housing substantially defining a pressure chamber, a pressure responsive member movable in response to fluid pressure communicated to the pressure chamber, a control valve disposed within the housing and operable during a brake application to communicate the fluid pressure to the pressure chamber, and an input member extending into the housing to cooperate with the control valve, characterized by said housing substantially defining a first cylinder with a bore therethrough for receiving said pressure responsive member and said input member, and said housing substantially defining a second cylinder extending in a perpendicular direction from said first cylinder, said second cylinder defining a bore for receiving said control valve, said input member

supporting a linkage assembly which is engageable with said pressure responsive member and said control valve, said linkage assembly comprising a plate engaging said control valve and a pair of links pivotally engaging said plate and said input member, one of said links also pivotally engaging said pressure responsive assembly.

4,385,548

BRAKE UNIT HAVING A SLACK ADJUSTER

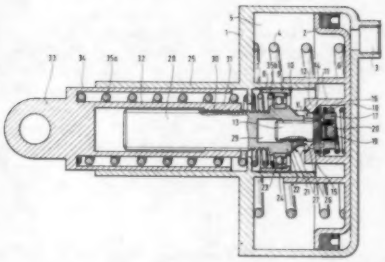
Erling Persson, Staffanstorp, and Lars B. Axelsson, Malmö, both of Sweden, assignors to Knorr-Bremse GmbH, Munich, Fed. Rep. of Germany

Filed Mar. 25, 1981, Ser. No. 247,620

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1980, 3011713

Int. Cl.³ F16J 1/10; F01B 3/00

U.S. Cl. 92—33 **7 Claims**



1. A brake unit for automatically adjusting slack between brake surfaces of a brake particularly for rail vehicles comprising a cylinder having a tubular extension, a sleeve adapted to be connected to brake rigging axially displacable within said cylinder tube extension and having a threaded adjusting nut rigidly attached thereto, a spindle shaft having first non-self-locking threads engaging said adjusting nut such that said spindle shaft is axially displacable with respect to said sleeve, said spindle shaft having second non-self-locking threads thereon, a first spring acting against said sleeve in a direction to increase the total length of said sleeve and spindle shaft, a piston slidable within said cylinder and having opposed first and second coupling surfaces to transmit torque and axial forces, said first and second coupling surfaces transmitting axial forces in opposite directions, a first shoulder on said cylinder to limit axial movement of said spindle shaft in a brake release direction, a second spring acting against said spindle shaft in the brake release direction to urge said spindle shaft against said first shoulder, a control shaft threadedly engaged with said second non-self-locking threads of said spindle shaft and axially and rotatably moveable with respect thereto, said control shaft having a third coupling surface thereon, a third spring acting between said piston and said control shaft in the same direction as said first spring to urge said third coupling surface into engagement with said second coupling surface, there being a fourth coupling surface on said spindle shaft engageable with said first coupling surface, said spindle shaft and said control shaft having axially spaced opposing surfaces and the axial distace between said opposing surfaces being less than the axial distance between said fourth and first coupling surfaces when the brake unit is in a brake release position, said first coupling surface engaging said fourth coupling surface when said opposing surfaces contact each other and said second and third coupling surfaces are disengaged.

4,385,549

AUTOMOBILE VENTILATING APPARATUS

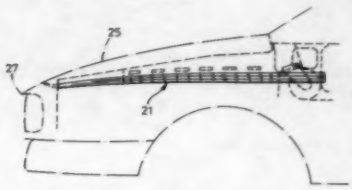
Andreas Bauer, and Dieter Protze, both of Wolfsburg, Fed. Rep. of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Jun. 15, 1981, Ser. No. 273,613

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1980, 3024988

Int. Cl.³ B60H 1/28

U.S. Cl. 98—2 **6 Claims**



1. In an automobile with a hood and front fenders enclosing wheel arches and a separation joint between said hood and fenders, a device for ventilating the passenger compartment of said automobile comprising:

an air inlet gap disposed between said hood and said fender on each side of said automobile and extending laterally along said separation joint;

air conduits laterally disposed above the wheel arches of said automobile, and having air inlet openings providing fluid communication with said air gaps, said conduits being arranged to support said hood; and

a transverse conduit joining said lateral conduits with air outlets in said passenger compartment.

4,385,550

WHOLE HOUSE FAN

Robert E. Steiner, and Chandrakant V. Savla, both of St. Louis County, Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Mar. 26, 1981, Ser. No. 248,021

Int. Cl.³ F24F 7/06, 13/08

U.S. Cl. 98—43 R **15 Claims**

12. In a whole-house fan installed above an opening in a ceiling, said ceiling being supported by a plurality of generally horizontal, parallel joists above said ceiling, the improvement wherein said fan is installed over a pair of adjacent joists without cutting either of said joists, said fan comprising a fan impeller for drawing air through said opening in said ceiling, said fan impeller having a vertical axis of rotation, said fan impeller including blades which extend over said pair of adjacent joists when said fan is in operation; a motor for driving said fan impeller; a frame for supporting said fan impeller and said motor on said joists; and a venturi for defining an air path through said fan, said venturi including an opening defining a throat and a depending skirt fitting into close propinquity to said ceiling, wherein said opening in said ceiling and said depending skirt extend beyond said pair of adjacent joists, wherein said depending skirt is formed with a plurality of

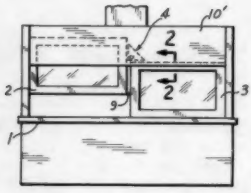
means for accommodating joists of different heights and on different spacings, two pairs of said plurality of means having been utilized to define openings in two opposed sides of said skirt, said openings each having a height substantially equal to the height of said pair of joists, and wherein said frame comprises a pair of spaced apart frame members extending across said pair of joists at right angles thereto, said frame members also including mounting means accommodating joists on different spacings, two pairs of said mounting means having been utilized to mount said fan to the upper faces of said pair of joists.

4,385,551

FUME HOOD WITH SASH LOCK

Jon A. Zboralski, Manitowoc, Wis., assignor to Hamilton Industries, Inc., Two Rivers, Wis.

Filed Sep. 22, 1980, Ser. No. 189,464
Int. Cl.³ F23J *11/00*
U.S. Cl. 98—115 LH **15 Claims**



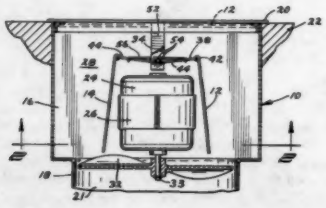
10. A fume hood comprising: a cabinet with an access opening; a plurality of vertically movable sashes to open and close portions of the access opening and having upper edge portions; and a sash lock pivotally connected to the fume hood between two sashes; which sash lock has a pair of abutment surfaces facing in different directions; one of the abutment surfaces engaging an upper edge portion of one sash to lock it against opening when the other abutment surface s positioned alongside the other sash when such other sash is open.

4,385,552

EXHAUST FAN AND ANTI-BACKDRAFT SHUTTER ASSEMBLY

Marvin Nabben, 3521 46th Ave. S., Minneapolis, Minn. 55406

Filed Apr. 16, 1981, Ser. No. 254,995
Int. Cl.³ F24F *13/10*
U.S. Cl. 98—116 **2 Claims**



1. In an exhaust fan assembly with anti-back draft shutters for use in ventilating a building structure, said assembly including:

a. a casing having an air passageway therethrough and aligned intake and exhaust ports defining said passageway, said casing being mounted in and providing an opening through a wall of a building structure to be ventilated;

b. an exhaust fan motor and attached fan blade operably mounted in said casing passageway with the motor adjacent said intake port and the fan blade adjacent said exhaust port;

c. a pair of shutters each pivotably mounted on a substantially vertical axis in said casing passageway between said motor and said intake port, said shutters being movable between an open position allowing substantially free passage of air through said casing intake port, past said motor and out said casing exhaust port and a closed position wherein said shutters are in sealing relation to each other and said casing intake port preventing passage of air back through said casing in direction from said exhaust port to said intake port; the improvement wherein:

A. each of said shutters is supported on its own pair of upper and lower parallel shutter support arms, said arms extending substantially horizontally outwardly from upper and lower vertically aligned edge corners of said shutter, respectively, and in substantially perpendicular relation to said shutter;

B. Each of the upper and lower shutter support arms is provided with a perpendicularly and vertically extending shutter pivot finger, the upper and lower fingers related to the support arms of each shutter being substantially vertically aligned with each other;

C. means is provided to pivotally mount such upper and lower pivot fingers of each of said shutters in adjacent relation to the upper and lower pivot fingers of the other of such shutters, respectively, in position so that the shutters can move between an open position wherein the shutters approach parallel relation with respect to each other with the motor in between them under the action of air being exhausted by said exhaust motor and fan and said closed position; and

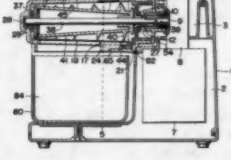
D. means is provided to normally bias said shutters to move from the open toward the closed position.

4,385,553

APPARATUS FOR SEPARATING LIQUID AND RESIDUAL SOLIDS

Keisuke Ihara, Kasukabe; Atsushi Takayama; Susumu Tanioka, both of Yokohama; Kazuo Toda; Akiyosi Sasaki, both of Tokyo, and Shoji Hoshino, Sagamihara, all of Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Jan. 21, 1981, Ser. No. 226,778
Claims priority, application Japan, Jan. 21, 1980, 55-6125; Jan. 21, 1980, 55-6126; Jan. 21, 1980, 55-6302[U]; Jan. 21, 1980, 55-6310[U]
Int. Cl.³ A23N *1/02*
U.S. Cl. 99—510 **2 Claims**



1. An apparatus for separating liquid and residual matter from a material comprising:

a case having upper, lower and lateral sides and opposite end walls and having a conical imperforate bore closed at opposite ends and with the axis thereof extending horizontally, said case being provided on the upper side with a material inlet opening communicating with the wider end of said conical bore, on the lower side with a juice outlet opening communicating with said bore below said axis, and on a lateral side with a residual matter outlet opening

communicating with said bore near the narrower end thereof and above said axis, said case having a filter for and located below said juice outlet opening;

a rotary member rotatably mounted in said bore and having a conical portion and a spiral blade formed on the periphery of said conical portion, said conical portion having a diameter which increases in size proceeding in a direction toward the narrower end of said conical bore, the space between the periphery of said conical portion and the inner peripheral surface of said conical bore decreasing in size proceeding in a direction toward the wider end of said conical portion, said spiral blade having a pitch which decreases as it proceeds toward the narrower end of said conical portion, said spiral blade having a crest which is spaced a constant distance from the inner peripheral surface of said conical bore, and which is spaced an increasing distance from the periphery of said conical portion proceeding in the direction toward the narrower end of said conical portion, that part of said spiral blade near said material inlet opening cooperating with the edge thereof to provide a cutting blade portion disposed near said material inlet opening and that part of said conical portion of said rotary member confronting said juice outlet opening and confronting said residual matter outlet opening defining a pressing portion; and

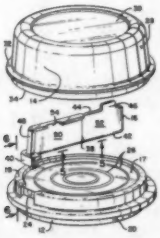
means for rotatably driving said rotary member so as to cut said material into pieces, to move said pieces from the wider to the narrower end of said conical bore, to squeeze said pieces to expel said liquid therefrom, and to expel said residual matter through said residual matter discharge opening.

4,385,554

STORAGE AND SERVING DISH FOR CHEESE

Robert H. C. M. Daenen, Hekelgem, and Pieter K. Jan De Coster, Aalst, both of Belgium, assignors to Dart Industries Inc., Northbrook, Ill.

Filed Mar. 27, 1981, Ser. No. 248,090
Int. Cl.³ A47J *43/18*; B65D *25/06*
U.S. Cl. 99—645 **5 Claims**



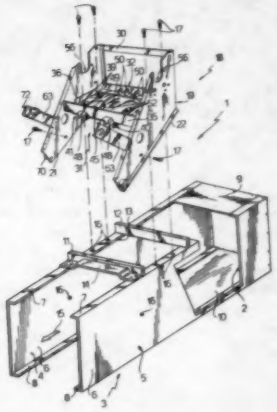
1. A storage and serving device for cheese or other foodstuff of a relatively unstable consistency, said device comprising a base and a holder, said base including a generally planar foodstuff-receiving bottom wall, a low peripheral rim area about said bottom wall, said holder being elongated and of a height, between top and bottom edges, to project substantially above said rim area, said holder comprising first and second generally planar portions, each portion having an inner and an outer end, said inner ends being hingedly interconnected for selective angular orientation of the second portion relative to the first portion for accommodation of the portions against cut edges of foodstuffs, said outer ends constituting opposed outer ends of the holder, said holder being positionable vertically in transversely overlying relation on the bottom wall with the bottom edge of the holder on said bottom wall, mounting means for fixing the outer end of said first portion to said rim area, said mounting means being a projecting member rigid with the bottom edge of the holder and depending therefrom at the outer end of said first holder portion and a slot through said rim area receiving and retaining said projecting member, said mounting means retaining the fixed outer end and the adjoining holder portion against both pivotal and peripheral movement, the second holder portion having the outer end thereof free of the bottom wall and rim area, said second portion being angularly adjustable relative to the retained holder portion.

4,385,555

BALER WITH A MODULAR BINDING UNIT

Giuseppe Meloncelli, Ferrara, and Carlo Ribetto, Broni, both of Italy, assignors to Industrie Metallurgiche e Meccaniche S.A.I.M.M. S.p.A., Tresigallo, Italy

Filed May 26, 1981, Ser. No. 266,812
Int. Cl.³ B65B *13/08*
U.S. Cl. 100—19 R **5 Claims**



1. A baler (1) comprising a rear tubular member (3) of substantially parallelepiped section and arranged to be traversed by material to be baled, and a binding unit (18) comprising at least one binding assembly (20) disposed on said tubular member (3) and arranged to cooperate with said material in order to bind it into bales as it moves along said tubular member (3), characterized in that the top of said tubular member (3) has an aperture (13) therein, and said binding unit (18) comprises a modular frame (19) connected to the tubular member (3) by detachable connection means (17), said modular frame having two side plates (21, 22) joined together by a base (31), said base being connected to said tubular member (3) by said detachable connection means (17) and being disposed in a position to at least partially close said aperture (13), a plurality of bracket means (50, 52, 74) extending from said base (31) for fixing said binding assembly (20) to said base, and a pair of struts (63) extending from said side plates (21, 22) and supporting a device (64) for measuring the quantity of material passing through said tubular member (3).

4,385,556

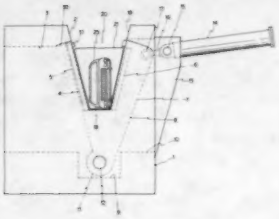
MACHINE FOR CUTTING SCRAPPED GOODS

Masao Suzuki, 880 Sezaki-cho, Soka-shi, Saitama-Ken, 340, Japan

Filed Sep. 28, 1981, Ser. No. 306,149
Int. Cl.³ B30B *9/32*
U.S. Cl. 100—98 R **1 Claim**

1. An apparatus for cutting scrapped goods comprising: a machine frame having a table provided with at least one recess; a bifurcated pressing member consisting of a lifting portion and a cutting portion and pivoted at its base end to said machine frame in such a manner that said lifting portion and a said

cutting portion are rotated simultaneously into and out of said recess, so that a scrapped good placed on said table is cut by the cutting portion of said pressing member and said recess and pressed into a tubular form by the co-operation of said pressing member and said recess as said pressing member is actuated by



a pressing cylinder and the pressed tabular scrap is lifted to the level of said table by said lifting portion in the returning rotation of said pressing member caused by the retracting operation of said pressing cylinder; and a pay-off device adapted to discharge said tabular scrap to the outside of said table.

4,385,557

DRAINAGE DEVICE FOR A FRUIT PRESS

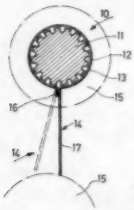
Eduard Hartmann, Schneisingen, Switzerland, assignor to Bucher-Guyer AG, Niederweningen, Switzerland

Filed May 6, 1981, Ser. No. 261,054

Claims priority, application Fed. Rep. of Germany, May 28, 1980, 3020266

Int. Cl.³ B30B *9/06*

U.S. Cl. 100—107 **14 Claims**



1. In a press for obtaining juice from agricultural products having a container, a press plate and a reaction press plate movable relative to one another within said container, a plurality of longitudinal drainage lines connecting said press plates, each line having a predetermined drainage capability and including a flexible central core, and a sleeve of a material acting as a filter surrounding said central core,

in combination,

at least one of said drainage lines including a drainage element extending therefrom, wherein said drainage element is composed of a flexible strip of textile material extending from said sleeve and acting as a filter.

4,385,558

INK AMOUNT DETECTING DEVICE

Yasuhiro Takahashi, Toyko, and Yoshiharu Ohinata, Kawasaki, both of Japan, assignors to Riso Kagaku Corporation, Tokyo, Japan

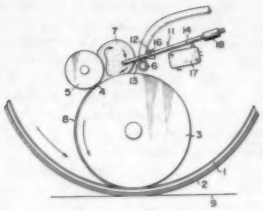
Continuation of Ser. No. 77,546, Sep. 21, 1979, abandoned. This application May 22, 1981, Ser. No. 266,452

Claims priority, application Japan, Oct. 18, 1978, 53-128044

Int. Cl.³ B41F *31/06*

U.S. Cl. 101—120 **5 Claims**

1. A device for detecting the amount of ink disposed in an ink deposit provided along a linear corner space defined by the outer peripheral surface of an ink supply roller adapted to rotate around its central axis and a squeeze element arranged in parallel with the central axis of said ink supply roller in close proximity to said outer peripheral surface while leaving a small linear clearance there-between through which ink from the ink deposit is taken out in the form of a thin ink layer formed on the outer peripheral surface of said ink supply roller as it rotates, said ink deposit being thereby formed into a columnar shape having a curved surface which rotates around its axial core portion, comprising a lever supported at a portion thereof so as to be pivotable around an axis which is substantially parallel with the central axis of said ink supply roller, said lever and said pivotal portion being positioned relative to said linear



corner space so that one end of said lever extends into and is driven by the rotating columnar ink deposit when the cross-sectional size of the ink deposit has exceeded a predetermined size and that, when said one end of said lever has once been caught and driven by said rotating columnar ink deposit during its growth, thereby pivoting said lever around said pivotal portion, said one end of said lever comes closer to said core portion of said rotating columnar ink deposit, thereby instantaneously substantially increasing the depth of thrusting of said one end of said lever into said ink deposit due to said curved surface thereof and thereby providing a hystersis large enough to insure stable operation of the device even with a pivoting action of relatively small angle of said lever, and a means for detecting the pivoting action of said lever.

4,385,559

DAMPENING DEVICE FOR OFFSET PRINTING MACHINES FOR ALTERNATE AND SELECTIVE UTILIZATION OF WATER OR OF A WATER-ALCOHOL MIXTURE

Roberto Jarach, Via Monte Rosa, 17, Milano, Italy

Continuation of Ser. No. 14,453, Feb. 23, 1979, abandoned, which is a continuation-in-part of Ser. No. 841,637, Oct. 12, 1977, abandoned. This application Jan. 12, 1981, Ser. No. 224,298

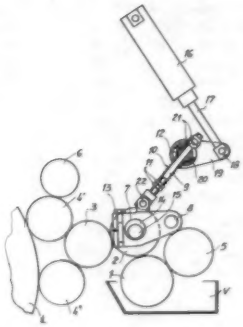
Claims priority, application Italy, Dec. 28, 1978, 31378 A/78

Int. Cl.³ B41F *7/26, 7/40*

U.S. Cl. 101—148 **6 Claims**

1. A dampening device for a printing press including a plate cylinder and an inking assembly, which dampening device supplies one of at least two types of dampening fluid including water and a water-alcohol mixture to the plate cylinder and is separate from the inking assembly and which comprises a dampening assembly formed by two dampening rollers (4', 4'') tangentially rotatably contacting said plate cylinder, a vibrating assembly formed by a first vibrating roller (3) in rolling engagement with at least one of said dampening rollers; a transfer roller (2) in rolling engagement with said first vibrating roller and with a dipping roller (1) which is partially immersed in a tray containing said dampening fluid; a metering and paring assembly formed by said dipping roller and a metering-paring roller (5) contacting only said dipping roller (1) upstream of the contacting zone between said dipping roller (1) and said transfer roller; a recovering and paring assembly formed by said dampening rollers and a second vibrating roller

(6) which contacts only one of said dampening rollers downstream of the contacting zone between said dampening roller and the plate cylinder; said first vibrating roller (3) having and imparting a reciprocating axial motion to said second vibrating roller (6), and lever means responsive to the vibration of the first vibrating roller (3) and engaging said second vibrating roller (6) for imparting to said second vibrating roller said reciprocating motion and wherein said two dampening rollers and said transfer roller cooperate in series and in parallel with the first vibrating roller, said dampening rollers and said transfer roller being removable and the dampening assembly comprises means for removing said removable dampening rollers and said transfer roller; one of said dampening rollers being the upper dampening roller, and said device includes means for coupling said vibrating rollers (3) and (6) for synchronous reciprocating axial movement, said coupling means including respective grooves on said vibrating rollers (3) and (6), said grooves receiving follower members carried on a lever (23) supported for pivotal movement about a given axis, and spring



means connected to one said roller (5) and adjustable to vary the contact pressure exerted by said roller (6) onto said dampening roller (4'); and further including first pneumatic means operable to actuate camming means, said camming means acting on spring means to selectively pressurize said transfer roller, said transfer roller exerting pressure on said dipping roller and on said first vibrating roller; and further comprising means for substituting the dampening and transfer rollers, said means comprising a collet (62), a tapered spindle within the collet disposed for threaded engagement therewith to effect relative axial movement between said spindle and said collet, in accordance with the rotation of said spindle, a bushing (67) receiving said collet therethrough to guide the axial movement thereof along an axis established by said bushing, support means holding said bushing in an established position, a bearing (63) connected to said collet for movement therewith, said bearing being movable axially into and out of receiving engagement with a bearing housing of one said dampening rollers by the action of said collet and spindle.

4,385,560

REMOTE ADJUSTMENT AND MEASURING UNIT FOR INK ZONING SCREW OF A DOCTOR BLADE MECHANISM IN AN INK FOUNTAIN OF A PRINTING MACHINE

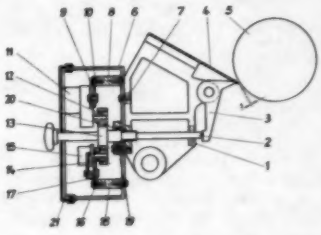
Hans Johne, Radebeul; Arndt Jentzsch; Wolfgang Müller, both of Coswig; Karl-Heinz Förster, Dresden, and Helmut Schuck, Coswig, all of German Democratic Rep., assignors to Veb Kombinat Polygraph "Werner Lamberz" Leipzig, Leipzig, German Democratic Rep.

Filed Apr. 6, 1981, Ser. No. 251,317

Claims priority, application German Democratic Rep., Apr. 10, 1980, 220337

Int. Cl.³ B41F *3/04*

U.S. Cl. 101—365 **5 Claims**



1. A remote adjustment and measuring unit for an ink zoning screw of a doctor blade mechanism in an ink fountain of a printing machine, the screw engaging a threaded hole in the ink fountain and having a projecting rear end portion, said unit comprising a housing connectable to said ink fountain in the range of said threaded hole, a bearing mounted on said housing for supporting and guiding the rear end portion of the screw, a driving electric motor mounted in said housing, transmission gears interconnecting said motor and said rear end portion of the screw, a measuring potentiometer mounted in said housing and having its shaft provided with an additional gear in mesh with one of said transmission gears, and said bearing for the rear end portion of the screw being located between said transmission gears and said threaded hole.

4,385,561

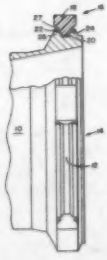
LAUNCH TUBE BORE RIDER

Jimmy M. Madderra, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 2, 1981, Ser. No. 230,465

Int. Cl.³ F42B *13/16*

U.S. Cl. 102—523 **2 Claims**



1. In a missile having a detent groove at the aft end and disposed for launching from a telescoping launcher having a pair of launch tubes of different internal diameters, apparatus

for centering said missile in said tubes comprising: a member secured in said detent groove, said member including a lower portion bonded in said detent groove and an upper extending portion disposed in engagement with the internal surface of the larger diameter tube, said member further inclining a notch of predetermined depth disposed between said upper and lower portions and a flanged portion disposed between said lower portion and said notch, said flanged portion being bonded to a pair of shoulders forming said detent groove, said member disposed for shearing at said notch responsive to engagement with the shoulder of a smaller diameter tube, said lower portion of said member being retained in said detent groove for engagement with the internal surface of the smaller diameter tube.

4,385,562

TRAVELING CRANE WITH TOP GIRDERS AT THE END OF A BRIDGE GIRDER

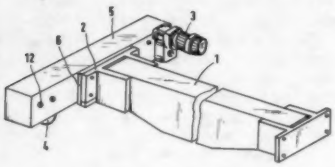
Harald Bitsch, Witten; Klaus Donner, Hagen; Rainer Horbach, Witten, and Peter W. Rump, Schwerte, all of Fed. Rep. of Germany, assignors to Mannesmann Demag AG, Duisburg, Fed. Rep. of Germany

Filed Apr. 1, 1980, Ser. No. 136,389

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1979, 2913486

Int. Cl.³ B66C *6/00*

U.S. Cl. 105—163 R **8 Claims**



3. In a travelling crane of the type including a bridge girder, end plate means secured to the end of said bridge girder, and top girders mounted to said end plates characterized by

(a) bearing means located in said top girders for mounting carrying wheels;

(b) said being means comprising opposed bearing halves, pressed into U-like forms and secured to each other by welding,

(c) roller bearing races pressed into the opposed walls of said bearing means halves,

(d) roller bearings received in said roller bearing races,

(e) said top girders being formed with bore holes for the reception of bearing means connecting elements,

(f) recesses formed in said top girders surrounding said bore holes,

(g) the bottom of said recesses forming predetermined in depth reference planes,

(h) tubular spacing sleeves received in said recesses and serving to locate said bearing means in a predetermined spaced relationship to said top girders, said spacing sleeves being of greater length than the depth of said recesses formed in said top girder such that an air gap is provided between said bearing means and said top girders, and

(i) connecting elements received in said bore holes for securing said bearing means to said top girder.

4,385,563

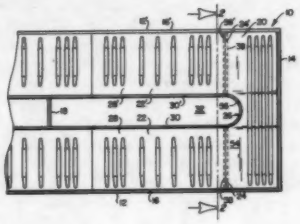
ROOF SUPPORT FOR A RAILROAD CAR ROOF

Edward A. Bell, Lansing, and William E. Solt, Olympia Fields, both of Ill., assignors to Abex Corporation, New York, N.Y.

Filed Apr. 9, 1981, Ser. No. 252,650

Int. Cl.³ B61D *17/16*

U.S. Cl. 105—377 **2 Claims**



1. A railroad car including: a cargo space defined by a pair of longitudinally extending side walls and a pair of laterally extending end walls; a plurality of roof sheets covering the cargo space; a vertically extending coaming formed in the roof sheets which defines the longitudinal edges of a hatch opening, said hatch opening extending longitudinally of the roof, and at least one partition which extends laterally between the side walls and vertically to engage and support a portion of the roof load; characterized by a roof support having a central section and a pair of arms which project from opposite sides of the central section wherein the longitudinal axis of the arms passes through the hatch opening and said central section defines a portion of the hatch opening but does not intrude therein; means connecting one end of each of the arms to a side wall of the car to thereby connect the central section with each of the car side walls and a vertically extending coaming which is attached to the central section, projects upwardly from the central section and defines the lateral edge of the hatch opening and the roof support engages the roof and transfers a portion of the roof load between the partition nearest the end wall and the end wall to the side walls of the car without intruding into the hatch opening.

4,385,564

PALLET AND METHOD OF MAKING SAME

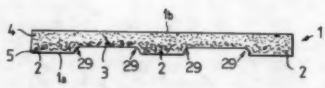
Anton Heggenstaller, Mühlenstrasse 9, D-8891 Unterbernbach, Fed. Rep. of Germany

Filed Dec. 23, 1980, Ser. No. 219,859

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1980, 3035701

Int. Cl.³ B65D *19/14;* D04H *1/20;* B29C *17/00*

U.S. Cl. 108—51.1 **10 Claims**



1. A method of making a pallet comprising the steps of sequentially:

filling into an upwardly open elongated mold of generally regular cross section a mass of coarse and fine particles and a binder in such a manner that said fine particles are concentrated in the lower portion of said mass and said coarse particles are concentrated in the upper portion of said mass;

compressing said mass of particles downwardly in said mold to a relatively great extent at several longitudinally spaced-apart locations and to a lesser extent therebetween

to form upwardly projecting bumps between said locations;

curing the thus compressed mass into a stiffening rib; and

securing at least one board to a plurality of such ribs arranged parallel to one other.

4,385,565

SHELF SUPPORT

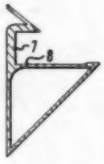
Hubert P. Roberts, 268 Wandsworth Bridge Rd., London SW6 2UA, and Clifford Roberts, 11 Bathurst Ave., Merton Park, SW. 19, both of England

Filed May 5, 1980, Ser. No. 146,686

Claims priority, application United Kingdom, May 4, 1979, 7915604

Int. Cl.³ A47B *5/00*

U.S. Cl. 108—152 **1 Claim**



1. A shelf assembly comprising a shelf of substantial arbitrary length and of simple rectangular cross sectional geometry, and a shelf support therefor, said support being continuous and of a length corresponding to the length of the shelf and having a section defining

(a) a backing by which the support is to be secured in position with the backing upright,

(b) a support extension comprising a first portion extending outwardly from said backing to define an upward facing support surface for frictional engagement with the lower face of the inserted shelf near the edge thereof and a second portion extending downwardly and inwardly to a location where the second portion is joined to the backing, said first and second portions and said backing defining a hollow space therebetween which is capable of serving as a conduit for a lighting or other electrical supply, and

(c) a retaining ridge also extending outwardly from said backing but to a lesser extent than said support extension to define a downward facing retaining surface directly opposed to said support surface for frictional engagement with the upper surface of said inserted shelf and spaced therefrom by the thickness of the shelf, said support surface and retaining surface constituting opposed sides of a channel running the length of the support which receives the said one longitudinal side of the shelf with the shelf being slid in for retention cantilverwise with the weight taken by a downward force of the underside of the shelf on the support surface and an upward force of the upper side of the shelf on the retaining surface, said shelf completely filling the channel defined by said support surface, said retaining surface and the backing, and said support surface including, at a position thereof which opposes said retaining surface, a narrow upwardly projecting formation for biting into the material of the shelf, said formation extending the length of said support surface.

4,385,566

BURNER APPARATUS

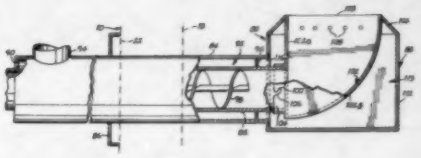
Loren A. Harris, Rte. 1, Box 294, Montague, Calif. 96064

Division of Ser. No. 140,712, Apr. 16, 1980, Pat. No. 4,323,017.

This application Dec. 14, 1981, Ser. No. 330,684

Int. Cl.³ F23K *3/00*

U.S. Cl. 110—110 **3 Claims**



1. Burner apparatus comprising

an elongate fuel conduit having a metallic and thus heat conductive wall defining a fuel passage for the supply of fuel,

an elongate air conduit encompassing said fuel conduit, said air conduit and fuel conduit defining therebetween an air passage for the supply of air, the metallic and heat conductive wall of the fuel conduit separating the fuel and air passages whereby they are in heat exchange relation, the air and fuel conduits having open ends which face the same direction and are adjacent each other,

a burner unit having a front and a rear, and including, an an integral assembly, a receptacle with an interior for holding fuel and an open top, a shell secured to and surrounding the receptacle defining an air chamber encompassing the receptacle, and aperture means in said receptacle for venting air from said chamber into the receptacle adjacent said open top,

said burner unit further having a first annular means facing the front of the burner unit defining an entrance which passes through said shell and communicates with said air chamber, and a second annular means also facing the front of the burner unit defining an entrance which passes through said receptacle and communicates with the interior thereof, an axial projection of said first annular means encompassing said second annular means whereby the second annular means is exposed at the front of the unit by the first annular means,

a concentric detachable fit of said open end of said air conduit with said first annular means, and a concentric detachable fit of said open end of the fuel conduit with said second annular means, and

releaseable means detachably locking the end of at least one conduit to the annular means with which it is detachably fitted for preventing relative axial displacement of the burner unit from the fuel and air conduits, said air and fuel conduits are substantially concentric, said second annular means comprises a collar intergral with the receptacle, the fuel conduit is telescopically fitted with said collar, and said releasable means detachably locks the end of said fuel conduit and said collar.

4,385,567

SOLID FUEL CONVERSION SYSTEM

George D. Voss, Western Springs, Ill., assignor to Solid Fuels, Inc., Western Springs, Ill.

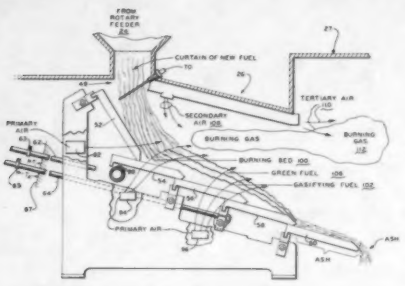
Filed Oct. 24, 1980, Ser. No. 200,472

Int. Cl.³ F23N *5/18*

U.S. Cl. 110—186 **39 Claims**

1. A solid fuel gasifying energy conversion system comprising means for delivering solid fuel from a feeder to a burning area at a controlled rate; means for advancing a bed of said solid fuels at a controlled rate from said fuel delivery means through an area containing a bed of coals to an ash area; means in said area containing said bed of coals for drying said solid

fuel before it reaches said burning bed of coals; said means for delivering and said means for advancing causing said bed of solid fuel to form an underlying burning layer which is said bed of coals, an intermediate layer where said solid fuel gasifies while it is in said burning area and while it is over the bed of coals, and an overlaying green fuel layer; and combustion air



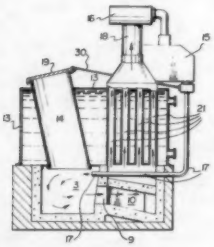
delivery means for uniformly supplying primary combustion air throughout said bed of solid fuel as it advances from said fuel delivery means at said feeder through said advancing means, and means for supplying secondary combustion air for controlling the flow of said gasified fuel from the burning area where the controlled rate of advance occurs to a gaseous burning area.

4,385,568

SOLID FUEL FURNACE

David Murray, Prince Edward Island, Canada, assignor to Kerr Controls Limited

Filed Dec. 1, 1980, Ser. No. 211,802
Int. Cl.³ F23B 7/00
U.S. Cl. 110—234 **12 Claims**



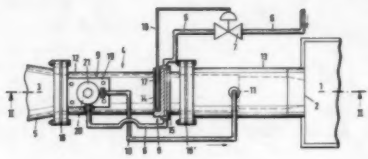
1. Apparatus for burning solid materials comprising a combustion chamber; a fuel chamber situated above said combustion chamber and communicating therewith by way of an opening in the top of said combustion chamber; a heat exchange chamber situated laterally of said combustion chamber, said heat exchange chamber including a heat exchange means; (and) a tunnel connecting said combustion chamber to said heat exchange chamber, said tunnel being adapted to conduct flue gases from said combustion chamber to said heat exchange chamber, said tunnel being adapted to cause secondary combustion in said gases during passage therethrough, said tunnel including walls having inside and outside surfaces, at least a portion of said passage being situated in said heat exchange chamber; at least one said wall being adapted to transmit energy from the outside thereof to said heat exchange means, by radiation.

4,385,569

APPARATUS FOR THE PREVENTION OF FIRE SPREADING WITHIN THE FEEDING CHANNEL LEADING INTO THE FIRE CHAMBER OF A FURNACE FOR SOLID FUEL

Hans Grossniklaus, Garage, 3855 Brienz, Switzerland

Filed Oct. 15, 1981, Ser. No. 311,867
Claims priority, application Switzerland, Oct. 17, 1980, 7760/80
Int. Cl.³ F23D 1/00
U.S. Cl. 110—263 **8 Claims**



1. A furnace comprising a fire chamber (3), a feeding channel (4) for solid fuel opening into said fire chamber, feeding means for feeding said fuel through said feeding channel (4) into said fire chamber (3), a steam pipe (10) opening (11) into the said feeding channel (4) for introducing water vapor into said solid fuel present within said feeding channel (4), a water supply pipe (6), a heat exchanger (9) connecting said water pipe (6) with said steam pipe (10), said heat exchanger (9) connected adjacent the fire chamber for the purpose of evaporating water from the water pipe (6) by means of combustion heat transmitted by the said heat exchanger (9), control means (7) for controlling the feed of said water vapor including a temperature sensor (17), arranged at said feeding channel (4), said control means (7) releasing the feed of said water vapor only if a pre-set temperature in the feeding channel (4) has been exceeded, said pre-set temperature indicating a spreading of the fire out of the fire chamber (3) into said feeding channel (4), said control means including a closing means (7) connected in the water pipe (6) to control the supply of water in said water pipe to be evaporated, and said temperature sensor (17) connected to control said closing means (7) in such a manner that said closing means (7) opens in response to a sensed temperature above a pre-set temperature and closes below the said pre-set temperature, the temperature sensor (17) being located in a second heat exchanger (8), arranged at the feeding channel (4) and connected into the water pipe (6), causing the flowing water, after the opening of the closing means (7), to cool down the second heat exchanger (8) to a temperature triggering the closing of the closing means (7) after a certain amount of water has passed through.

4,385,570

PROGRAMMING SYSTEM FOR AUTOMATIC SEWING MACHINE

Toshiaki Yanagi, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jan. 5, 1981, Ser. No. 222,298
Claims priority, application Japan, Jan. 31, 1980, 55-10687
Int. Cl.³ D05B 21/00
U.S. Cl. 112—121.12 **6 Claims**

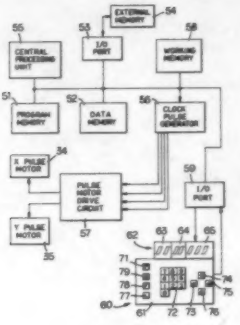
1. A programming system for an automatic sewing machine which varies relative position between a workpiece and a needle to form a series of unit stitch patterns of the same shape along a predetermined reference line, each of said unit stitch patterns consisting of successive stitches, said programming system comprising:

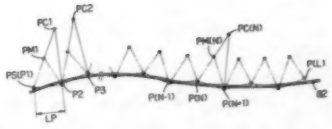
manual means operative to determine pattern positions on said reference line, said unit stitch patterns being respectively placed at said pattern positions;

means for generating pattern position data corresponding to said pattern position;

program storage means for permanently storing a calculation program prearranged to determine different stitch positions in said unit stitch pattern, said different stitch positions including at least one position spaced from said reference line, said successive stitches being respectively placed at said different stitch positions;

processing means for executing said calculation program





based on said pattern position data to work out stitch instructions each of which relates to each of said different stitch positions and is capable of influencing said relative position; and

instruction storage means for storing the stitch instructions worked out by said processing means with respect to all of said unit stitch patterns to be formed along said reference line.

4,385,571

AUTOMATIC BELT LOOP TACKER

Louis W. Breck, Jr., El Paso, Tex., assignor to Billy The Kid, Inc., El Paso, Tex.

Continuation-in-part of Ser. No. 76,085, Sep. 17, 1979, Pat. No. 4,287,842. This application Apr. 15, 1981, Ser. No. 254,455

Int. Cl.³ D05B *23/00*

U.S. Cl. 112—121.27 **10 Claims**

1. Apparatus for sewing a belt loop to a garment comprising:

means for intermittently feeding a string of unfolded, end-to-end connected ones of said belt loops onto a support,

means for severing individual ones of said loops from said string of loops in response to said loop being fed onto said support.

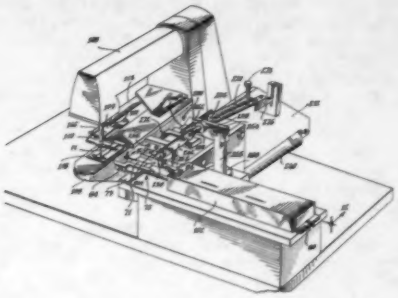
folding means adjacent said support for folding opposite transverse ends of said severed belt loop back upon itself, and

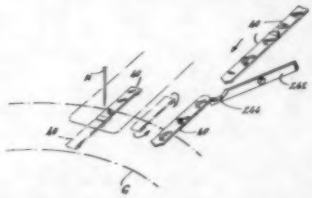
sewing means for tacking a folded belt loop to a garment,

said folding means including:

means for reciprocating said folding means to deliver a folded belt loop beneath said sewing means for tacking the folded belt loop to a garment; and

said sewing means including:





means for successively positioning the transverse ends of said belt loop beneath said sewing means to that the transverse ends can be sewn to a garment.

4,385,572

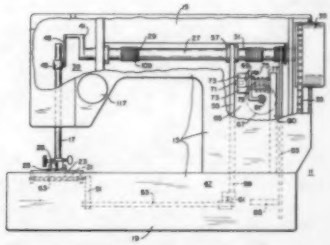
DROP-IN PATTERN STITCH ASSEMBLY FOR A STRAIGHT STITCH SEWING MACHINE

Martin Redovian, 1185 Sierra Vista Way, Lafayette, Calif. 94545

Filed Feb. 2, 1981, Ser. No. 231,045

Int. Cl.³ D05B *3/02*

U.S. Cl. 112—158 R **20 Claims**



1. In a sewing machine comprised of a machine frame having a top portion and a base portion, a horizontal drive shaft having a forward end and a rearward end extending through the top portion of said machine frame, a drive motor for rotating said horizontal drive shaft, a needle bar and a needle bar reciprocating mechanism actuated by said horizontal drive shaft, a needle plate beneath said needle bar, a feed rock unit beneath said needle plate to longitudinally move material placed

thereon, a feed rock drive assembly including a feed rock oscillating shaft extending through the base of said machine frame, a cam actuated feed fork for rotating said feed rock oscillating shaft from said horizontal drive shaft, and a feed fork regulator disposed beneath the rearward end of said horizontal drive shaft for adjusting the drive action of said feed fork for, in turn, adjusting the movement of said feed rock unit, a drop-in pattern stitch assembly comprising

a first drop-in cam drive sub-assembly removably disposed in the top portion of said machine frame proximate the forward end of said horizontal drive shaft, said first drop-in cam drive sub-assembly including a first rotatable cam means having a pattern control surface thereon, and means for rotatably driving said first cam means from the forward end of said horizontal drive shaft,

a first cam follower means disposed in the top portion of said machine frame to follow the pattern surface of said first cam means and regulate the lateral motion of said needle bar in correspondence therewith, and

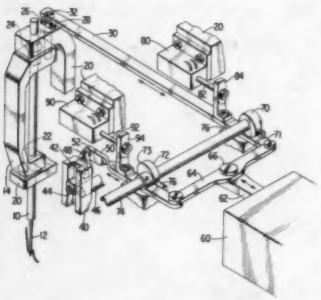
a second drop-in cam drive sub-assembly disposed in the top portion of said machine frame proximate the rearward end of said horizontal drive shaft separate from said first drop-in cam assembly and means for removably mounting same to said machine frame, said second drop-in cam drive sub-assembly including a second rotatable cam means having a pattern surface thereon, means for rotatably driving said second cam means from the rearward end of said horizontal shaft, and a second cam follower means for following the pattern surface of said second cam means and controlling said feed fork regulator in correspondence therewith for, in turn, regulating the longitudinal action of said feed rock unit.

4,385,573

SINGLE ACTUATOR CONTROL OF MULTIPLE SEWING INSTRUMENTALITIES

Michael J. Brienza, Ridgewood, and Peter J. Totino, North Bergen, both of N.J., assignors to The Singer Company, Stamford, Conn.

Filed May 11, 1981, Ser. No. 262,167
Int. Cl.³ D05B *3/02*
U.S. Cl. 112—158 E **10 Claims**



1. An electronically controlled stitch pattern sewing machine including an electronic memory means for storing stitch pattern data, a plurality of stitch forming instrumentalities at least two of which are each positionally controllable over a predetermined range;

a single actuator responsive to the data content of said memory means for effecting movement;

a plurality of coupling means for imparting selected predefined movements to said at least two of said controllable stitch forming instrumentalities;

control means for selectively and individually connecting said single actuator to each of said coupling means; and

means for selecting and applying specific data content stored in said electronic memory to said single actuator when said control means individually connects said single actuator to each different one of said plurality of coupling means;

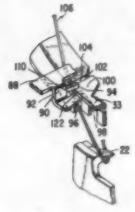
whereby said selected predefined movements are effected by said single actuator.

4,385,574

THREAD GUIDING AND HOLD-DOWN PAWL FOR BOBBIN WINDING MECHANISM OF A SEWING MACHINE

Gerald J. Creed, Rahway, and Charles R. Odermann, Montville, both of N.J., assignors to The Singer Company, Stamford, Conn.

Filed May 20, 1981, Ser. No. 265,290
Int. Cl.³ D05B *59/00*
U.S. Cl. 112—184 **6 Claims**



1. In a lockstitch sewing machine, a cup-shaped circular moving looptaker including a peripheral rim formed with a thread seizing beak; a non-rotatable bobbin case supported in the looptaker; a rotatable bobbin within the bobbin case, an endwise reciprocable needle movable into a position for presenting a loop of needle thread to the looptaker beak for seizure; a thread tensioning device carried by the bobbin case and including an arm forming a thread entering slot for said device with a shoulder on the bobbin case; a bobbin winding control arm; a pawl movable by the control arm, the pawl including one finger disposable with the pawl into a position wherein the tip of the finger extends into engagement with the underside of an end portion of the arm of the thread tensioning device, and an edge of the finger is situated to guide a limb of a seized loop of needle thread into the slot for passage into the thread tensioning device, said pawl including another finger which in the thread guiding position of said one finger is in overlying engagement with the arm of the tensioning device and is effective to prevent the thread from lifting the arm and escaping from the slot; thread pick up means on the bobbin; and means responsive to movement of the control arm for rotating the bobbin to cause the bobbin to pick up and wind thread extending through the tensioning device onto the bobbin.

4,385,575

EASY-THREADING SEWING NEEDLES AND METHOD OF MAKING SUCH NEEDLES

Richard D. Weber, 1647 Wood Duck Dr., Wheeling, Ill. 60090

Filed Jul. 8, 1980, Ser. No. 167,098
Int. Cl.³ D05B *85/02*
U.S. Cl. 112—224 **2 Claims**

1. An improved, easy-threading needle, comprising an elongated member having an outer surface and a point defined at one longitudinal end, and an eye defined by a pair of sidewalls formed in said member, said eye being defined intermediate said pointed end and the other longitudinal end of the needle, one of said sidewalls being slit along a plane generally oriented at an oblique angle to both the outer surface and the central axis at said one sidewall, said slit running from said outer surface through said one sidewall and to said eye so as to divide said sidewall into a clip member and a restraining member, and

wherein the clip member is spring-biased to contact said restraining member and close the slit, but wherein said clip member may be resiliently bent inward in response to the pressure of a thread against said clip member at the outer surface of said slit, to open said slit so as to allow the thread to pass through it and into the eye, but to resiliently spring back against said restraining member to close the slit after the thread has entered said eye; and

said needle is for use in a sewing machine, said eye is elongated along an axis approximately paralleling the axis of the needle, and has one elongated eye end away from said pointed end, and

wherein said clip member extends away from said pointed end and defines said slit to open at said one eye end away from said pointed end; and

said clip member and said restraining member are tapered at the outer surface of the wall to form a guiding trough thereat for receiving a thread; and

wherein the eye is positioned off-center of the needle so that said one end wall is thinner than the other of the pair of sidewalls and wherein the point of the needle is formed along a line offset from the main axis of the needle and aligned with and under the off-center eye.

4,385,576

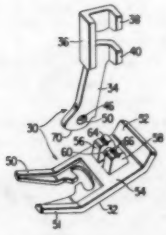
PRESSER FOOT AND SHANK DESIGN (SNAP-ON)

Walter H. W. Marsh, Scotch Plains, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Nov. 9, 1981, Ser. No. 319,169

Int. Cl.³ D05B *29/00*

U.S. Cl. 112—240 **3 Claims**



1. In combination, a plastic presser foot with a pair of upstanding spreadable legs, and a shank to enter therebetween while forcing the legs apart, said legs and shank being formed with protuberances and recesses which mutually engage in a predetermined relative position of the shank and foot to establish a pivotal axis for the foot on the shank in a sewing machine, the shank including a bottom contoured end surface to contact a portion of the foot between said legs and provide a surface upon which the foot can roll during sewing operations on the machine.

4,385,577

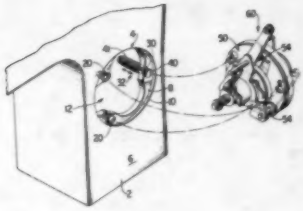
SEWING MACHINE CONTROL MECHANISM MOUNTING PLATE

Thomas G. Graham, Emerson, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Aug. 3, 1981, Ser. No. 289,336

Int. Cl.³ D05B *73/00*

U.S. Cl. 112—258 **1 Claim**



1. A sewing machine having a frame, a plurality of stitch forming instrumentalities, a manually actuatable control mechanism for influencing the operation of one of said plurality of stitch forming instrumentalities, and mounting means for removably attaching said control mechanism to said frame, wherein said mounting means comprises:

a. a mounting plate rigidly fastened to said control mechanism;

b. a constraining means for constraining movement of said plate to substantially a single predefined path relative to said frame including a slot in said plate and a pin in the frame for sliding engagement along the slot, the pin including a head with a diameter which is larger than the width of the slot except for an enlarged one end which is sufficiently large to allow the head to pass therethrough, and

c. a locking means for affixing the plate to said frame including an enlarged diameter on the pin under the head and an end portion of said slot adapted to receive the enlarged diameter of the pin while excluding the head, and a spring about the pin for biasing the enlarged diameter into said adapted end portion of the slot and the head of the pin against the plate, the pin having a finger engageable end which is at the opposite end of the pin from the head and to which manual pressure can be applied to enable the plate to be connected to and disconnected from the frame.

4,385,578

PLACEMENT AND RETRIEVAL BARGE FOR OFF-SHORE WELL DRILLING

Frederick J. Grace, 36 Island Lake La., Naples, Fla. 33962

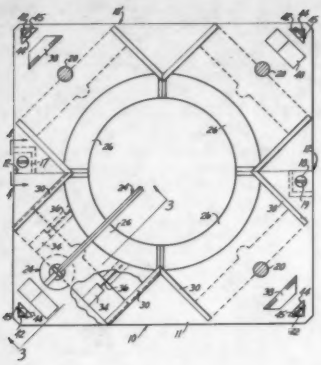
Filed May 11, 1981, Ser. No. 262,186

Int. Cl.³ B63B *3/02*

U.S. Cl. 114—77 A **5 Claims**

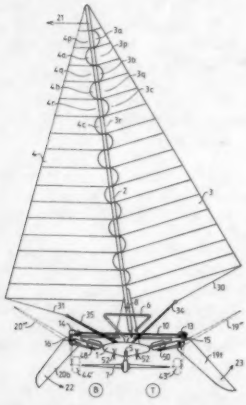
1. A placement and retrieval modular barge system for off-shore well drilling comprising at least two separable barge sections having means for being joined together, each barge section being made of a floatable hull having a deck capable of carrying thereon sections of a blow-out collar, said barge system having a central opening formed therein for surrounding a well drilling derrick when said barge sections are joined together, each barge section being provided with radially movable platform means slidably supported in the hull thereof,

and means for actuating said platform means to retract it to the confines of said opening or extend it therefrom a distance



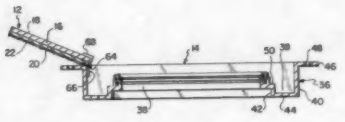
sufficient to support a blow-out collar during assembly or disassembly thereof.

4,385,579
SAILING CRAFT
Gerard Baulard-Caugan, Dauphine-Pavillon Du Barry, 78439 Louveciennes, France
Filed Jul. 28, 1980, Ser. No. 172,933
Claims priority, application France, Jul. 27, 1979, 79 19414; Jul. 27, 1979, 79 19414
Int. Cl.³ B63B *15/00*; B63H *9/10*
U.S. Cl. 114—91 **11 Claims**



10. Sailing craft of the type including a floating hull, a mast secured on the hull, a sail mounted on the mast, and a rudder means, comprising: said mast being pivotally mounted with an articulation near but spaced from its base with respect to a substantially horizontal axis, a pair of mobile fins having variable lift movably mounted, each on a respective one of the port and starboard sides of the hull, and means interconnecting said mast and the mobile fins for actuation of the mobile fins such that the fins act in the water in such a way as to tend under dynamic action of water on the fins to right the hull in a direction opposite to the direction in which the mast pivots, and in which the craft would normally heel under the action of just the wind to which it is exposed, and further including a lever articulated around a horizontal axis in the median longitudinal plane of the craft and toward its stern part, and which can rotate on itself, the said lever terminating at its upper end above the hull in an operating handle, and at its lower end, below the hull, in a plane in the general shape of a dolphin's tail.

4,385,580
MARINE DOOR UNIT
Samuel L. Davidson, Winnsboro, La., assignor to Mastercrafters Corporation, Winnsboro, La.
Continuation of Ser. No. 27,792, Apr. 6, 1979, abandoned. This application Mar. 12, 1981, Ser. No. 243,088
Int. Cl.³ B63B *19/12*
U.S. Cl. 114—201 R **3 Claims**



1. A marine door unit adapted to be inserted into an opening in the deck surface of a boat for the purpose of permitting access to a compartment beneath the deck surface while preventing water leakage into such compartment, said unit comprising:

a frame means including four interconnected side members which fit into the opening in the deck surface;

said side members having outwardly directed flanges which exceed the size of the opening in the deck surface whereby the flanges abut against the deck surface and suspend the frame means in the opening when said unit is installed in a boat;

said side members each including spaced parallel inner and outer leg portions interconnected by a base portion extending between them to thereby define an upwardly directed channel;

said four interconnected side members thus providing four interconnected channels which serve to define a continuous open-topped channel means which extends about the periphery of the opening in the deck surface;

a flat door having an inner surface which is directed toward said channel means and an outer surface which is substantially coextensive with said deck surface when said door is in its closed position;

said door being hingeably attached along one edge thereof to the top of one of said frame outer leg portions to thereby enable said door to swing completely open so that the outer surface thereof abuts against said deck surface;

support means engageable against the inner surface of said door when said door is in its closed position to thereby permit said door to support the weight of a person standing upon or walking across the closed door;

said support means including an upstanding support rail means connected with said side frame inner leg portions;

said support means further including a continuous sealing gasket which abuts and seals against said door inner surface when said door is closed; and

drain means in said channel means;

said unit having a narrow crack formed between the periphery of said door and the outer leg portions of said side members when said door is in its closed position, said crack being aligned above said channel means so that water which leaks through the crack will enter directly into the channel means and will discharge therefrom through said drain means;

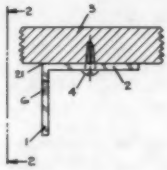
said sealing gasket being operative to prevent water from overflowing said channel means and entering said compartment since such water is prevented from passing between said gasket and said door inner surface so long as said door is in its closed position.

4,385,581

DEVICE FOR TYING TO A POINT OF SUPPORT

Howard F. Patterson, 1840½ W. High St., Springfield, Ohio 45504

Continuation of Ser. No. 146,460, May 5, 1980, abandoned. This application Jan. 11, 1982, Ser. No. 338,220
Int. Cl.³ B65H 75/26; F16G 11/04; D06F 53/04
U.S. Cl. 114—218 1 Claim



1. A method of securing flexible means having first and second portions and having an intermediate portion therebetween to a plate having a first edge and coupled to a support structure, said plate having an elongated slotted opening with open and closed ends situated on a line forming an acute angle with said first edge, said plate further having a notch situated on a line passing generally parallel to said first edge, comprising the steps

(a) looping said flexible means about said plate so said intermediate portion passes through said elongated slotted opening and comes to rest in said closed end,

(b) engaging said first portion with said notch,

(c) passing said first portion between said second portion and said plate,

(d) passing said first portion through said elongated slotted opening, and

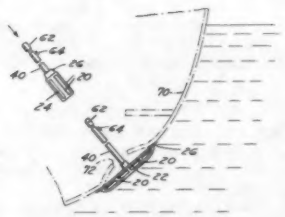
(e) applying tension to said second portion in a manner such that said tension develops clamping pressure on said first portion, wedging said first portion between said second portion and said plate.

4,385,582

INFLATABLE DEVICE TO CLOSE A HULL BREACH

Erwin J. Fuerst, 1183 N. River Rd., St. Clair, Mich. 48979

Filed Apr. 9, 1981, Ser. No. 252,394
Int. Cl.³ B63B 43/16
U.S. Cl. 114—227 5 Claims



1. An apparatus for closing accidental breaches in the bottom and side walls of water going vessels which comprises:

(a) a flexible disc-like collapsible shield having a plurality of hollow flexible radial rib passages pneumatically connected to a hollow flexible peripheral passage,

(b) impervious web-like connections between said passages,

(c) means associated with said passages to conduct and retain fluid under pressure to said passages to cause said shield to assume a distended functional shape,

said means comprising a core having opposed recesses exposed on each side of said shield selectively to receive one end of a positioning handle,

(d) a positioning handle having one end to insert into a core recess, and

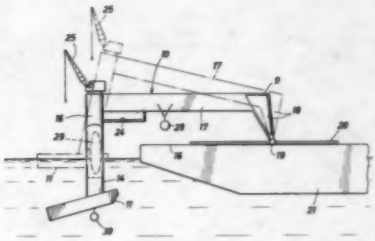
(e) means on said handle to discharge compressed gas into said core from either side of said shield.

4,385,583

WORK PLATFORM

Ray R. Ayers, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Oct. 16, 1980, Ser. No. 197,399
Int. Cl.³ B63B 35/00
U.S. Cl. 114—265 22 Claims



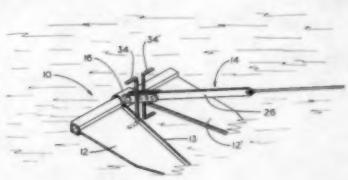
1. A semi-submersible trailer attachable to a vessel comprising a work platform, at least two connected semi-submersible flotation means supporting the platform, means for pivoting the trailer up to a transit mode and down to a work performance mode, and connecting means extending between the trailer and the pivoting means.

4,385,584

BOAT ANCHOR

Lee S. Simpson, III, 4275 N. Chateau Fresno Ave., Fresno, Calif. 93711

Filed Jul. 15, 1981, Ser. No. 283,452
Int. Cl.³ B63B 21/44
U.S. Cl. 114—306 12 Claims



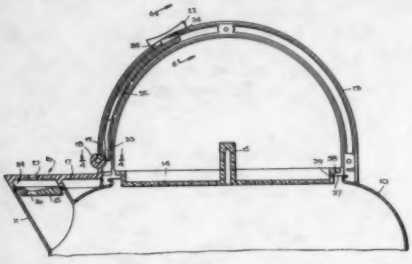
11. An anchor assembly comprising a pair of flukes having portions engageable with each other in an assembled configuration; a fastener engaging said portions releasably to capture the flukes in said assembled configuration; a shank; coupling means for interconnecting the flukes and the shank in the assembled configuration including a tubular member extending about said portions of the flukes in the assembled configuration wherein said flukes are pivotal within the tubular member when in said assembled configuration substantially about a first predetermined axis, said coupling means mounting the shank for pivotal movement about a second predetermined axis substantially parallel to and spaced from the first predetermined axis; and means borne by the anchor assembly for limiting said pivotal movement of the flukes to a predetermined range about the first predetermined axis.

4,385,585

TEAKETTLE HAVING WHISTLE CAP

Sam Lebowitz, New York, N.Y., assignor to Copco, Inc., Secaucus, N.J.

Filed Oct. 27, 1981, Ser. No. 315,310
Int. Cl.³ G08B *3/02*; B65D *45/00*
U.S. Cl. 116—67 R **8 Claims**



1. A teakettle for boiling water comprising:

(A) a covered vessel having a lip surrounding its opening and a spout projecting from its body;

(B) an integrated rim and hollow bail for the vessel, said rim engaging the lip and the bail being arched thereover;

(C) a whistle cap normally closing said spout and having an extension arm terminating in a pinion mounted for rotation at one end of the bail, said pinion having teeth which lie within the hollow bail;

(D) an arcuate strip slidably disposed within the bail, the front end of the strip having a rack thereon engaging said teeth; and

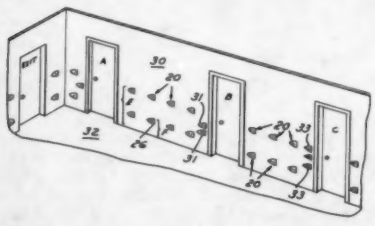
(E) a finger pad slidable on the exterior of the bail at a position adjacent the top thereof, said pad being coupled through a slot in the bail to the rear end of the strip whereby by pushing the pad forward, the rack is advanced to turn the pinion and lift the cap.

4,385,586

ESCAPE/RESCUE SYSTEM

Frederick G. Schriever, 64 Claireview, Grosse Pointe Shores, Mich. 48236

Filed Sep. 4, 1981, Ser. No. 299,560
Int. Cl.³ E04H *6/42*; G09G *3/06*
U.S. Cl. 116—205 **8 Claims**



1. A system for tactually indicating both the direction of an escape route and the distance to an exit thereof for use in a building structure having a floor and wall along which a person will move in following the escape route, comprising, in combination:

a plurality of arrow-shaped members secured to the wall at determined spaced apart locations along the escape route in a position to be touched by the hand of a person moving along the floor adjacent the wall, said members being arranged with the smaller end pointing in the direction of the exit of the escape route; and

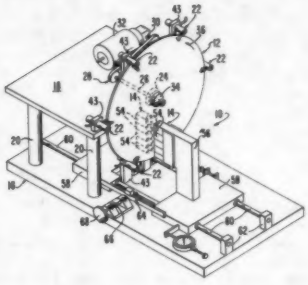
each member having on an exposed surface, to be readily touched and counted by a person moving along the escape route, an ordered number of contact points wherein the number is related to the distance to such exit from each such member, whereby a person moving along the floor may tactually determine the direction to the exit and the distance at each such member.

4,385,587

APPARATUS FOR PROCESSING A FLEXIBLE MAGNETIC RECORDING MEDIUM

Richard N. James, San Jose, and Kenneth S. Goodale, Mountain View, both of Calif., assignors to Dysan Corporation, Santa Clara, Calif.

Filed Oct. 10, 1980, Ser. No. 195,973
Int. Cl.³ C23C *13/08*
U.S. Cl. 118—50 **27 Claims**



1. Apparatus for orienting the magnetic particles of a magnetic coating on a flexible magnetic recording medium comprising: means adapted to be coupled to the medium for mounting the same in an operative position for rotation in a predetermined plane; means adjacent to said mounting means for rotating said medium; fluid flow means adjacent to the outer periphery of the medium when it is in said operative position for keeping the medium from deviating laterally from said plane when the medium is rotated by said rotating means, whereby the medium is maintained in said plane; and means adjacent to said operative position for providing a magnetic field magnetically coupled with the particles of the coating on the medium when the medium is in said operative position to orient the particles in predetermined directions.

4,385,588

ELECTRIFIABLE-MATERIAL APPLICATOR

Remy J. P. Bennetot, Pont Sainte-Marie, France, assignor to Societe Industrielle de Decoration et Application "Sida", Troyes, France

Filed Nov. 26, 1980, Ser. No. 210,538
Claims priority, application France, Nov. 28, 1979, 79 29718; Sep. 5, 1980, 80 19588
Int. Cl.³ B05B *5/02*
U.S. Cl. 118—638 **3 Claims**

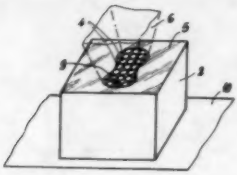
1. An apparatus for the application of electrifiable particles such as a flock and cut fibers, to an adhesive-coated substrate in accordance with a predetermined pattern, comprising:

a frame having vertical walls;

a conductive grill disposed on one side of said frame and juxtaposed with said substrate for electrostatically charging particles and promoting transfer thereof to said adhesive;

a multiplicity of elongated cylindrical elements in the form of individual tubes disposed in said frame and extending

perpendicular to said substrate, said elements defining channels opening at said grill toward said substrate, said elements being in contact with one another along respective generatrices, at least some of said elements contacting said walls of said frames along generatrices of said elements;



a mask formed with an opening corresponding to said pattern and disposed on said elements at ends thereof remote from said grill to expose channels within the opening;

means for introducing said particles into said channels through said opening, said frame, said grill and said elements forming a distributor for said particles; and

means for vibrating said distributor.

4,385,589

METHOD OF PREVENTING THE NORMAL REVERSION OF SALMON SMOLT AND THE LIKE IN FRESH WATER BACK TO PARR CHARACTERISTICS, AND FOR EFFECTIVELY IMBUING SEA SALMON WITH LAND-LOCKED SALMON CHARACTERISTICS

Albert H. Knowles, and Robert H. Rines, both of 13 Spaulding St., Concord, N.H. 03301

Filed Dec. 28, 1981, Ser. No. 334,742

Int. Cl.³ A01K *61/00*

U.S. Cl. 119—3 **3 Claims**

1. In a method of raising salmon and the like in fresh water, that comprises, rearing the salmon in fresh water from the parr stage until they develop the characteristics of smolt, suitable for introduction into salt water generally within a limited period of time, and absent which introduction they would following said period generally revert back to parr characteristics unsuitable for salt water survival and growth; the improvement comprising preventing the smolt from reverting to parr by maintaining the smolt at least through said period in a dark volume of fresh water from which direct and indirect light is substantially excluded, but with sharply contrasting illuminated zones adjacent and external to said dark volume; producing water current within said volume; and introducing feed from time to time into the illuminated zones, thereby holding the fish in a continual smolt characteristic condition with continuing growth.

4,385,590

APPARATUS FOR ON-SITE DETECTION OF MASTITIS IN MILK ANIMALS

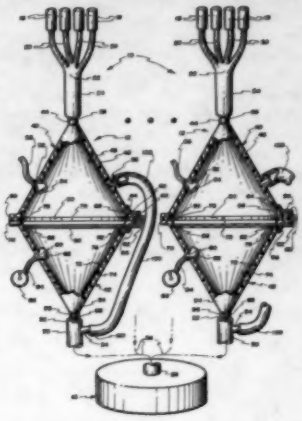
Bruce Mortensen, Rte. 3, Rupert, Id. 83350

Filed Dec. 11, 1981, Ser. No. 329,645

Int. Cl.³ A01J *7/00*

U.S. Cl. 119—14.01 **14 Claims**

1. A method of detecting mastitis in milk animals comprising the steps of continually filtering a stream of milk as it is derived from a given animal at a milking site prior to comingling the milk of said animal with the milk of another animal, collecting on a disposable filter at the filtering site clotted material, if any, indicating the existence of mastitis in said animal while entirely avoiding exposure of the milk of said animal to electrical conductivity, the mastitis accumulated on the filter at the filter site increasing the relative opacity of the filter, and optically detecting the presence and absence of mastitis on the filter at said filtering site so that the animal at each milking while at the



milking site is known to be free of or in need of prompt treatment for mastitis.

4,385,591

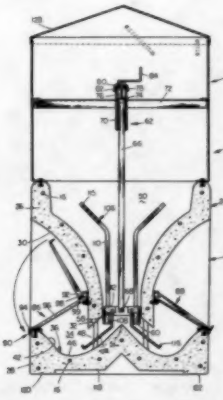
HOG FEEDER

Chris C. Petersen, 1523 1st Ave. S., Denison, Iowa 51442

Filed Apr. 24, 1981, Ser. No. 257,348

Int. Cl.³ A01K *5/00*

U.S. Cl. 119—53.5 **10 Claims**



1. A hog feeder comprising,

at least a lower unit including a bottom portion, opposite end walls, spaced-apart side wall members extending between said end walls, and an open upper end, said side wall members defining a central feed storage area therebetween,

each of said side wall members comprising spaced-apart upper and lower wall portions having outer surfaces which dwell in substantially the same vertical plane, an arcuate intermediate wall portion extending downwardly and inwardly from the lower end of said upper wall portion to said bottom portion inwardly of said lower wall portion,

a plurality of horizontally spaced-apart bowl divider walls

extending inwardly from said lower wall portions to said intermediate wall portions to define feed bowls having inner and outer ends, spaced-apart side walls and a bottom,

each of said intermediate wall portions having an opening formed therein at the inner end of each of said feed bowls to provide communication between said feed storage area and the feed bowls,

said lower unit being of monolithic concrete construction,

a feed control means selectively vertically movably mounted within said feed storage area adjacent said openings for controlling the rate of flow of the feed from the feed storage area to said feed bowls,

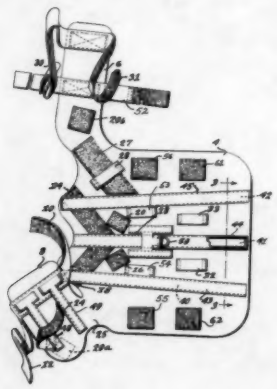
and an agitator assembly mounted on said feed control means for vertical movement therewith, said agitator assembly including a movable bar means which extends outwardly through each of said openings in said intermediate wall portions into the associated feed bowl whereby movement of the bar means by a feeding hog will agitate the feed.

4,385,592

CANINE CERVICAL BRACE

Brad L. Goldstein, 107 7th St., Colorado Springs, Colo. 80906

Filed Jul. 27, 1981, Ser. No. 287,517
Int. Cl.³ A01K *15/04, 29/00*
U.S. Cl. 119—96 **6 Claims**



1. A canine cervical brace comprising:

a generally rectangular laterally flexible and longitudinally stiffened upper body blanket adapted to cover the back and upper side portions of an animal and having:

an elongated belly member integral with and extending from a front corner portion of the blanket and adapted to be positioned between the front legs of the animal and extend rearwardly over the lower chest and belly;

girth means attached to the belly member;

fastening means attached to the girth means for securing the girth means around the body of the animal;

an elongated anterior neck restraining sling integral with and extending from the other front corner portion of the blanket;

checkrein means attached to the sling; and

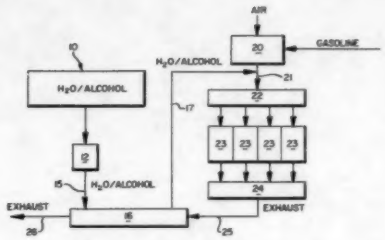
means for adjustably fastening the free end of the checkrein means to the top front portion of the blanket.

4,385,593

INTRODUCTION OF ALCOHOL-WATER MIXTURE INTO GASOLINE-OPERATED ENGINE

Richard J. Brooks, Seattle, Wash., assignor to The Chemithon Corporation, Seattle, Wash.

Filed Apr. 13, 1981, Ser. No. 253,779
Int. Cl.³ F02D *19/00*
U.S. Cl. 123—1 A **3 Claims**



1. A method for improving the fuel efficiency of an engine having an internal combustion chamber wherein a first mixture containing gasoline and air is fed into said internal combustion chamber, said first mixture is combusted in said chamber, and the exhaust from said combustion is withdrawn from said chamber, said method comprising the steps of:

providing a second mixture having water and alcohol as components thereof in a volume ratio of water to alcohol in the range 0.3–1.0 to 1;

containing said water and said alcohol separate and discrete from said gasoline;

withdrawing a measured flow of said second mixture;

combining said measured flow of said second mixture with said first mixture before the first mixture is fed into said internal combustion chamber, without previous mixing of said gasoline and said alcohol;

the measured flow of said second mixture being about 3–14 vol. % of said gasoline;

said alcohol and water in said second mixture being provided and maintained as a liquid stream until after said second mixture has been measured;

and heating said second mixture before the combination thereof with the first mixture, using heat generated by said combustion, to convert the alcohol and water in said second mixture from a liquid state to a gaseous state;

the totality of said method being performed without direct contact between said second mixture or its components and said exhaust.

4,385,594

TWO-CIRCUIT COOLING SYSTEM AND PUMP FOR AN ENGINE

Herbert J. Hauser, Jr., Waterloo, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Aug. 3, 1981, Ser. No. 289,543
Int. Cl.³ F01P *3/12*
U.S. Cl. 123—41.29 **7 Claims**

1. A cooling system for an engine comprising:

(a) first cooling means for cooling said engine;

(b) a first radiator fluidly connected to said first cooling means for holding a coolant;

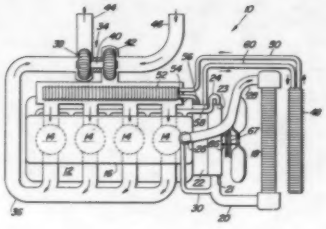
(c) second cooling means for cooling incoming air to said engine;

(d) a second radiator fluidly connected to said second cooling means for holding a coolant;

(e) a housing enclosing a centrifugal pump for circulating said coolant between said first radiator and said first cooling means and a turbine pump for circulating said coolant between said second radiator and said second cooling

means, said centrifugal pump and said turbine pump being integrally formed;

(f) a rotatable impeller member contained in and dividing said housing into first and second independent fluid chambers, with said first chamber being larger than said second chamber, said impeller member having a plurality of vanes on both sides thereof for facilitating the movement of a fluid through said first and second fluid chambers;



(g) a seal positioned between said housing and the periphery of said rotatable impeller for restricting fluid transfer between said first and second fluid chambers;

(h) first inlet and outlet ports communicating with said first fluid chamber for routing fluid therethrough; and

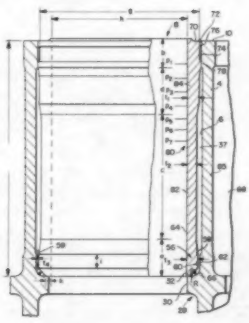
(i) second inlet and outlet ports communicating with said second fluid chamber for routing fluid therethrough.

4,385,595

BOTTOM STOP CYLINDER LINER AND ENGINE ASSEMBLY

Terrence M. Shaw, Columbus, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.

Filed Dec. 9, 1980, Ser. No. 214,702
Int. Cl.³ F02F 1/16
U.S. Cl. 123—41.84 **22 Claims**



1. An assembly for use with an internal combustion engine having a reciprocating piston connected to a rotating crankshaft, comprising

(A) an engine block having a head engaging surface and at least one cylinder cavity extending outwardly from the crankshaft toward said head engaging surface, said engine block including a liner stop extending radially inwardly at the inner end of said cylinder cavity,

(B) head means for closing the outer end of said cylinder cavity when connected to said engine block and moved into an operative position adjacent said head engaging surface; and

(C) a cylinder liner positioned within said cylinder cavity for guiding the reciprocating movement of the piston, said cylinder liner being held under compressive force by said head means, said cylinder liner including

(1) axial positioning means for axially positioning said cylinder liner within said cylinder cavity, said axial positioning means including a radially directed surface adjacent the inner end of said cylinder liner for engaging said liner stop, and

(2) compressive force sustaining means for minimizing the release of compressive force on said cylinder liner due to gas pressure within said cylinder cavity, said compressive force sustaining means including

(a) radial positioning means for radially positioning the outer end of said cylinder liner within said cylinder cavity while reducing axial constraint of said outer end within said cylinder cavity during engine operation by forming a radial press fit with the inside surface of the adjacent portion of said cylinder cavity, and

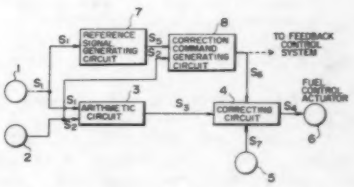
(b) a resilient liner body integral with and extending between said axial and radial positioning means, operating to apply axial spring force between said liner stop and said head means to place the portion of said engine block surrounding said cylinder cavity and extending between said liner stop and said head engaging surface under tensile force as said head means is connected to said engine block and moved into operative position, said liner body and said axial and radial positioning means having an axial compliance which is greater than the axial compliance of said surrounding portion of said engine block, the greater axial compliance of said liner body operating to cause the axial length of said liner body to change more than the axial length of said surrounding portion of the engine block when the liner body and the engine block are subjected to the same amount of force.

4,385,596

FUEL SUPPLY CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Akio Hosaka, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jul. 17, 1980, Ser. No. 169,823
Claims priority, application Japan, Jul. 19, 1979, 54-90930; Jul. 19, 1979, 54-90931
Int. Cl.³ F02D 5/02
U.S. Cl. 123—488 **18 Claims**



1. A fuel supply control system for an internal combustion engine, comprising:

first sensor means for detecting a load condition of an engine and generating a first sensor signal indicative of determined engine load;

second sensor means for detecting engine speed and generating a second sensor signal indicative of determined engine speed;

means for detecting an engine coolant temperature and producing a third sensor signal indicative of the determined engine coolant temperature;

arithmetic means for determining and producing a pulse signal having a pulse width indicative of a basic fuel sup-

ply amount determined based on said first and second sensor signal values;

third means for correcting said basic pulse width of said pulse signal based on said third sensor signal value; and

a fourth means for distinguishing engine driving conditions and generating a correction command for effecting said third means to increase or decrease said basic pulse width of said pulse signal or to shut off fuel supply based upon a correction coefficient, said correction coefficient being variable depending upon said first and second sensor signal values, and being indicative of a fuel shut off condition when it is equal to or below a first predetermined value, and indicative of an engine driving condition requiring decreasing the fuel supply amount to decrease said basic fuel supply amount when said correction coefficient is in a range between said first predetermined value and a second predetermined value, and indicative of an engine driving condition requiring increasing the fuel supply amount to increase said basic pulse width when said correction coefficient is equal to or above said second predetermined value.

4,385,597

TWO-STROKE INTERNAL COMBUSTION ENGINE

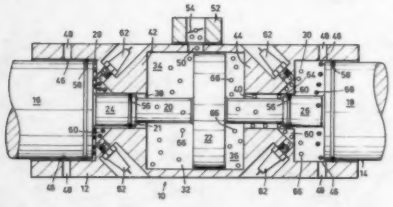
Frank Stelzer, Elbestrasse 39, Raunheim, Fed. Rep. of Germany

Filed Jul. 21, 1981, Ser. No. 285,495

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1980, 3029287

Int. Cl.³ F02B *33/06*

U.S. Cl. 123—62 **5 Claims**



1. A two-stroke internal combustion engine, comprising a cylinder having a pair of combustion chambers, a symmetrical, free floating differential piston freely movable within the cylinder, and having two spaced main piston portions each movable in a respective combustion chamber, the combustion chambers being arranged axially inwardly of the respective piston portions and each having exhaust means, an axially extending piston rod connecting said main piston portions, a pre-compression chamber arranged between said combustion chambers, a central, double-acting piston portion on said piston rod movable in said pre-compression chamber and dividing the same into two separate compression chambers, channels of hollow cylindrical configuration connecting the pre-compression chamber with each combustion chamber, said channels being located about said piston rod, and piston type valve means formed on said piston rod for closing the channel leading from one compression chamber to one combustion chamber and for opening the channel leading to the other combustion chamber when its main piston portion is in its bottom dead center position, whereby upon expansion occurring in said one combustion chamber material exchange occurs in the other, and a fuel mixture inlet port communicating with said pre-compression chamber, said double-acting piston portion adapted to close said inlet port and to alternately allow fuel mixture inlet into the separate compression chambers.

4,385,598

ENGINE SYSTEM

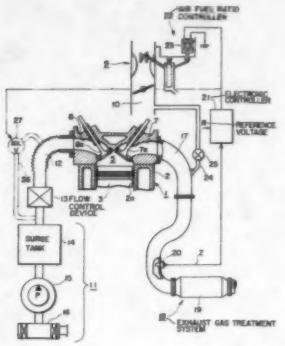
Yasuo Nakajima, Yokosuka; Michio Onoda, Yokohama, and Kunihiko Sugihara, Ichigaya-takashomachi, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Continuation of Ser. No. 856,583, Dec. 1, 1977, abandoned. This application Dec. 12, 1980, Ser. No. 215,720

Claims priority, application Japan, Dec. 2, 1976, 51-145125; Dec. 20, 1976, 51-153116

Int. Cl.³ F02B *25/00*; F02D *33/02*

U.S. Cl. 123—76 **21 Claims**



1. An internal combustion engine system including an internal combustion engine having a cylinder and a piston disposed in said cylinder to define a variable volume combustion chamber, comprising:

an intake means for inducting an air fuel mixture having an air-fuel ratio into said combustion chamber during an induction stroke of said piston;

an exhaust means for exhausting the exhaust gas resulting from the combustion of said air fuel mixture from said combustion chamber during an exhaust stroke of said piston;

an additional intake means, including a conduit means, for admitting air under pressure into said cylinder during a first phase which overlaps the exhaust stroke of said piston, so as to scavenge combustion products from said combustion chamber and for admitting air under pressure into said cylinder during a second phase which overlaps the intake stroke of said piston;

an exhaust gas purifying device in said exhaust means for purifying the gases from said combustion chamber; and

control means including a flow control valve disposed in said conduit means, said valve being responsive to signals representing engine speed and engine induction vacuum to decrease the amount of air admitted to said combustion chamber with increasing engine speed and decreasing induction vacuum;

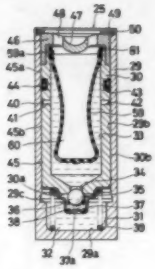
said control means further including means for proportioning the amount of air admitted to said combustion chamber during said first phase and during said second phase so that as the load on the engine increases the amount of air admitted during said first phase increases and the amount of air admitted during said second phase is decreased whereby said control means continuously controls the amount of air admitted to said combustion chamber during said first phase and during said second phase so that as the load on said engine increases the air fuel mixture combusted in said combustion chamber becomes richer.

4,385,599

SELF-CONTAINED HYDRAULIC LASH ADJUSTER

Takanobu Hori, Toyota; Fumio Arai, Kariya, and Hisashi Kodama, Nagoya, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Dec. 5, 1980, Ser. No. 213,518
Claims priority, application Japan, Dec. 17, 1979, 54-175134[U]
Int. Cl.³ F01L 1/24
U.S. Cl. 123—90.58 1 Claim



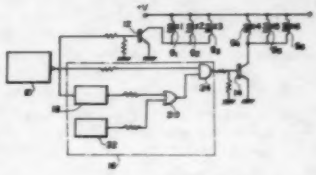
1. A self-contained hydraulic lash adjuster comprising
a cylinder member having a closed end portion,
a plunger slidingly mounted in said cylinder member,
a reservoir chamber located in said plunger,
a pressure chamber defined between said plunger and said closed end portion of said cylinder member,
a check valve for allowing fluid flow only from said reservoir chamber to said pressure chamber through a passage in said plunger,
a return spring stretched between said plunger and said closed end portion of said cylinder member for urging said plunger in the upward direction,
a leakage clearance formed between an inner surface and an outer surface of said plunger,
a first annular groove provided on said outer surface of said plunger,
radial hole means extended through said plunger in communication with said first annular groove to connect said leakage clearance to said reservoir chamber,
a second annular groove provided on said outer surface of said plunger above said first annular groove,
a sealing member fitted in said second groove for providing fluid-tight seal between said plunger and said cylinder member, and having a pair of lips with sharp edged portions in contact with said outer surface of said cylinder member and being alternately deformed onto said outer surface of said cylinder member upon upward or downward movement of said plunger,
a seat member for closing an open upper end portion of said plunger and for transmitting the thrust of a push rod to said plunger, and
an elastomeric bag member having a generally tubular shape with a closed bottom end and an open upper portions, said open upper end being fixed to an upper end portion of said reservoir chamber, an interior of said bag member being normally disposed in communication with atmospheric pressure through hole means in said seat member and an outer surface of said bag member in fluid-tight contact with operating fluid in said reservoir chamber.

4,385,600

SPLIT TYPE INTERNAL COMBUSTION ENGINE

Fukashi Sugasawa, Yokohama; Haruhiko Iizuka, Yokosuka; Yukihiro Etoh, Yokohama, and Toshiaki Tanaka, Fujisawa, all of Japan, assignors to Nissan Motor Company, Ltd., Yokohama, Japan

Filed Apr. 15, 1980, Ser. No. 140,665
Claims priority, application Japan, Apr. 18, 1979, 54-47438
Int. Cl.³ F02B 77/00
U.S. Cl. 123—198 F 4 Claims



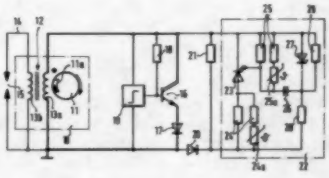
1. An internal combustion engine comprising:
(a) first and second cylinder units, each including at least one cylinder;
(b) an induction passage leading to said first and second cylinder units, said induction passage having therein a throttle valve;
(c) a control means responsive to engine load conditions for disabling said second cylinder unit when the engine load is below a predetermined value; and
(d) means for providing a command signal to cause said control means to hold said second cylinder unit active regardless of engine load conditions when the rate of change of opening of said throttle valve is above a predetermined value.

4,385,601

SYSTEM FOR LIMITING THE SPEED OF INTERNAL COMBUSTION ENGINE HAVING AN IGNITION SYSTEM UTILIZING A MAGNETO GENERATOR

Josef Orova, Schwabach, and Jiri Podrapsky, Rosstal, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 1, 1981, Ser. No. 269,346
Claims priority, application Fed. Rep. of Germany, Jul. 30, 1980, 3028907
Int. Cl.³ F02P 5/04, 3/04, 1/00
U.S. Cl. 123—335 8 Claims



1. System for limiting the speed of an internal combustion engine having
a magneto (10) including an armature, said armature forming an ignition coil (12) having a primary (13a) and a secondary (13b) winding,
a rotating magnet (11) for inducing an AC signal having a positive and negative half wave in said primary winding of said ignition coil,
ignition switch means (16) connected in series with said primary winding of said ignition coil,
ignition timing control means (19) connected across and

responsive to voltage (U_p) across the primary winding, and controlling said ignition switch means for switching said ignition switch means from the conductive to the blocked state when a selected one of said half waves (e.g. positive) reaches a predetermined ignition amplitude (U_S), and damping circuit means (20, 21) connected across said primary winding to draw damping current during occurrence of the other (then: negative) of said half waves, and speed dependent circuit means connected to said damping circuit means during occurrence of the other of said half waves drawing additional damping current and providing additional damping when said speed of said internal combustion engine exceeds a maximum allowable speed to delay rise in the voltage across the primary winding due to an increase in armature reaction resulting from said additional damping current and thus delay response of said ignition timing control means to the voltage (U_p) across the primary winding in the next subsequent one of said selected one of the half waves, thereby decreasing the speed of said internal combustion engine.

4,385,602

ROTATIONAL SPEED CONTROL DEVICE DURING IDLING OF ENGINE

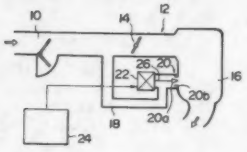
Hiroshi Itou; Haruo Watanabe; Hidenori Tateno, and Mamoru Kobashi, all of Aichi, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jul. 23, 1981, Ser. No. 286,347

Claims priority, application Japan, Jul. 25, 1980, 55-102782

Int. Cl.³ F02D *33/02*

U.S. Cl. 123—339 **6 Claims**



1. An idling rotational speed control device used in an internal combustion engine, comprising:

intake air flow rate control means for being opened or closed to control to a desired value an intake air flow rate taken into an intake manifold during idling of the engine;

driving means for being driven gradually by a predetermined value in accordance with the number of pulses of pulse signals to open or close said intake air flow rate control means; and

electronic control means for feeding to said driving means the pulse signals so that the step number determined by adding the pulse number of the pulse signals to a preset reference number or subtracting the pulse number of the pulse signals from the preset reference number and indicating the present position of said driving means is coincided with a desired step number which is preset and indicates a desired position of said driving means, during idling of the engine, so as to effect such a control that the present position of said driving means coincides with the desired position, and further, for feeding the pulse signals having a predetermined pulse number to said driving means after an ignition switch is opened, to cause said driving means to control said intake air flow rate control means to a maximum open degree or a minimum open degree, and initializing the step number indicating the present position of said driving means to the reference number after the pulse signals having the predetermined pulse number are fed to said driving means.

4,385,603

APPARATUS FOR REGULATING THE IDLING RPM IN AN INTERNAL COMBUSTION ENGINE

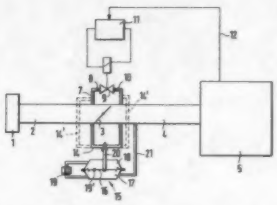
Bernhard Bonse, Korntal; Ulrich Kemmner, Stuttgart; Reinhard Klinkenberg, Markgröningen; Heinrich Knapp, Leonberg, and Michael Wassmann, Gerlingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 27, 1981, Ser. No. 287,003

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1980, 3028898

Int. Cl.³ F02B *3/00*

U.S. Cl. 123—339 **31 Claims**



1. An apparatus for regulating the idling rpm of an internal combustion engine having an intake tube in which an arbitrarily actuable throttle device is disposed, a bypass line arranged to bypass said throttle device, said line including a bypass valve electromagnetically triggerable in accordance with operating characteristics of the engine for controlling supplementary air, the improvement comprising a housed pressure-sensing adjusting element arranged to respond to an abrupt reduction in said intake tube pressure downstream of said throttle device and thereby effect an increase in the supplementary air quantity to said intake tube section downstream of said throttle device in accordance with the magnitude of the pressure reduction and in a time-related manner, said pressure-sensing adjusting element including a yielding wall separating a first chamber which communicates with said intake tube section downstream of said throttle device from a second chamber which communicates with said first chamber via a throttle restriction, and said pressure-sensing adjusting element being coupled with a movable valve element, whereby upon equal pressures being provided in said first and said second chambers said pressure-sensitive adjusting element closes a shunt line bypassing the bypass valve and wherein when there is lower pressure in the first chamber than in the second chamber said pressure sensitive adjusting element opens said shunt line.

4,385,604

METHOD AND DEVICE FOR OPERATION OF AN INTERNAL COMBUSTION ENGINE IN PARTICULAR FOR A VEHICLE

Ernst Fiala, Wolfsburg, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 27, 1980, Ser. No. 163,494

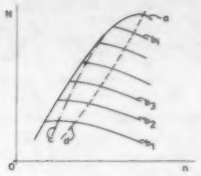
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1979, 2926024

Int. Cl.³ F02D *11/08*

U.S. Cl. 123—340 **25 Claims**

1. A method for operating an internal combustion engine speed having an adjustable fuel proportioning device and having variable power output and variable rotational speed, to avoid operation at engine speeds and output powers corresponding to high fuel consumption, consisting of the steps of selecting a value of maximum speed for each value of engine output power, said selected values corresponding to greater speed than the value for maximum power output at selected fuel consumption, monitoring the output power and the rota-

tional speed of said engine, and adjusting said fuel proportioning means to increase engine output only when said engine



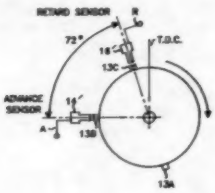
speed is greater than the selected value for the actual output power of the engine.

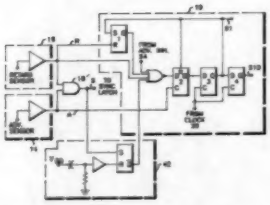
4,385,605

ELECTRONIC IGNITION INPUT LOGIC

Adelore F. Petrie, Arlington Heights, and Rupin J. Javeri, Elk Grove, both of Ill., assignors to Motorola Inc., Schaumburg, Ill.

Filed Oct. 13, 1981, Ser. No. 310,028
Int. Cl.³ F02D 5/16
U.S. Cl. 123—414 **8 Claims**





1. A control circuit for an electronic ignition system and comprising:

a first input means for providing a first set of input pulses in response to engine crankshaft rotation;

a second input means for providing a second set of input pulses in response to crankshaft rotation, each set of input pulses including three pulses per crankshaft revolution and only one pair of pulses being coincidental;

first latching means coupled to the first and second input means for providing an ignition control signal in response to the non-coincidental pulses;

first logic means coupled to the first and second input means for providing a reference signal in response to the coincidental pulses;

second logic means for providing a control signal in response to initialization of the control circuit, said control signal preventing enablement of the first latching means, and wherein the second logic means is coupled to the first logic means for being disenabled by said reference signal; and

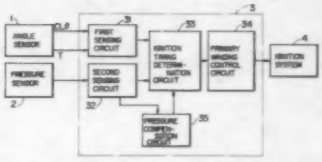
second latching means coupled to the first and second logic means for being latched by the control signal and released by the reference signal, the output of the second latching means being coupled to enable the first latching means.

4,385,606

IGNITION TIMING REGULATING DEVICE FOR INTERNAL COMBUSTION ENGINE

Tadashi Hattori, Okazaki; Kenji Goto, Susono; Daisaku Sawada, Susono; Takashi Shigematu, Susono; Hiroaki Yamaguchi, Anjo, and Minoru Nishida, Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Continuation of Ser. No. 40,050, May 17, 1979, abandoned. This application May 11, 1981, Ser. No. 262,763
Claims priority, application Japan, May 25, 1978, 52-62692
Int. Cl.³ F02P 1/00
U.S. Cl. 123—416 **8 Claims**



1. An ignition timing regulating device for use with an internal combustion engine having an intake manifold comprising:

a first sensing circuit adapted to receive a signal from a crankshaft angle position sensor for generating a speed of engine rotation signal;

a second sensing circuit, adapted to receive a pressure signal from a single intake manifold pressure sensor, for storing and periodically updating a digital signal indicative of a pressure sample;

an atmospheric pressure compensation circuit coupled to a key switch of the internal combustion engine and to the second sensing circuit for storing an initial value of intake manifold pressure before the intake manifold pressure is substantially reduced from atmospheric pressure as a result of engine operation, the atmospheric pressure compensation circuit comprising:

a timing circuit coupled to the key switch for generating a timing pulse,

an initial value memory means coupled to the timing circuit and adapted to receive an output of the second sensing circuit for memorizing the initial value of manifold pressure, and

a read only memory (ROM) for generating an atmospheric pressure compensation value corresponding to the initial value stored in the initial value memory means; and

an ignition timing determination circuit, connected to the first sensing circuit, the second sensing circuit and the atmospheric pressure compensation circuit for repeatedly determining during operation of the engine the ignition timing as a function of engine rotation speed, intake manifold pressure, and the stored initial value of intake manifold pressure supplied by the atmospheric pressure compensation circuit.

4,385,607

AUTOMOBILE IGNITION TIMING CONTROL SYSTEM

Yoshinori Honiden, and Katsumi Okazaki, both of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

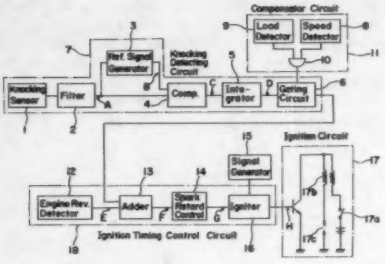
Filed May 5, 1981, Ser. No. 260,723
Claims priority, application Japan, May 20, 1980, 55-67239
Int. Cl.³ F02P 5/14
U.S. Cl. 123—425 **4 Claims**

1. An ignition timing control system for an automobile inter-

nal combustion engine having at least one spark plug, which comprises, in combination:

a knocking detecting circuit means for detecting the occurrence of knocking in the engine and for generating an output signal indicative of the occurrence of the engine knocking;

an ignition timing control circuit means adapted to receive an output from said detecting circuit means and operable to control the ignition timing, at which the spark plug is set to fire, in dependence on at least one engine parameter including the engine speed and the engine load; and



an inhibiting circuit means for interrupting the supply of the output signal from said detecting circuit means to said control circuit means only when the engine, which has been operated under a particular operating condition wherein the engine speed is lower than a predetermined speed value while the actual load imposed on the engine is larger than a predetermined load value, becomes operated under any engine operating conditions other than said particular operating condition.

4,385,608

SYSTEM FOR CONTROLLING AIR-FUEL RATIO

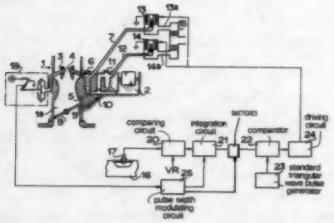
Masaaki Ohgami, Musashino; Hiroki Yasuda, Hachioji, and Hitoshi Suzuki, Chofu, all of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo and Nissan Motor Co., Ltd., Yokohama, both of, Japan

Filed Aug. 1, 1980, Ser. No. 174,378

Claims priority, application Japan, Aug. 2, 1979, 54-98924

Int. Cl.³ F02M *7/00*

U.S. Cl. 123—440 **9 Claims**



1. In a system for controlling the air-fuel ratio for an internal combustion engine having a carburetor with an intake passage, air-fuel mixture supply means for supplying an air-fuel mixture to the intake passage, an exhaust passage communicating with the engine, a throttle valve in the intake passage, detecting means for detecting the concentration of a constituent of exhaust gases passing through said exhaust passage and providing an output signal dependent thereon, an electronic control circuit means for producing square wave pulses in dependency on said output signal of said detecting means, and an on-off type electromagnetic valve means actuated by the square wave pulses from said electronic control circuit means for correcting the air-fuel ratio of the air-fuel mixture supply means, the improvement comprising

a venturi means in the intake passage upstream of said throttle valve for producing vacuum dependent on rapid acceleration of said internal combustion engine,

a vacuum sensor means for sensing said vacuum in said venturi means at rapid acceleration of the internal combustion engine and for producing a second output signal dependent thereon,

pulse width modulating means for producing a pulse width modulating signal when the second output signal of said vacuum sensor means rises above a predetermined level at rapid acceleration,

said pulse width modulating means being connected to said electronic control circuit means for feeding said pulse width modulating signal to said electronic control circuit means for modulating the width of said square wave pulses in dependency on said rapid acceleration for enriching the air-fuel mixture.

4,385,609

FUEL INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINES

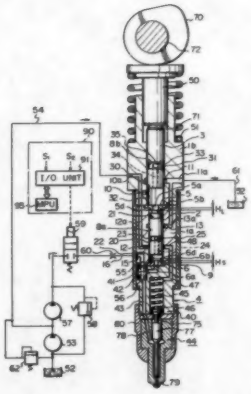
Masaaki Kato, Kariya, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed May 18, 1981, Ser. No. 264,698

Claims priority, application Japan, May 30, 1980, 55-71329

Int. Cl.³ F02M *57/02*

U.S. Cl. 123—446 **5 Claims**



1. A fuel injection system for an internal combustion engine, comprising:

a substantially cylindrical injector body having a delivery cylinder and an injection cylinder connected to the delivery cylinder,

a delivery plunger which is slidably fitted in the delivery cylinder and which defines a delivery pump chamber in the delivery cylinder,

an injection plunger which is slidably fitted in the injection cylinder and which defines an injection pump chamber in the injection cylinder,

said injection plunger being axially displaced by the fuel fed into the injection pump chamber, through a stroke in proportion to the amount of the fed fuel,

a first stop on one end of the injection cylinder adjacent to the delivery cylinder for limiting the axial movement of the injection plunger in one direction,

a second stop on the other end of the injection cylinder for limiting the axial movement of the injection plunger in the opposite direction,

fuel passage means for feeding the fuel into the injection pump chamber, and

nozzle means for injecting the fuel delivered by the injection pump chamber, said injection plunger being moved under the pressure which occurs in the delivery pump chamber due to the displacement of the delivery plunger to deliver the fuel in the injection pump chamber into the nozzle means,

said two stops comprising axially extending projections which are adapted to control the axial displacement of the injection plunger.

4,385,610

FUEL INJECTION PUMP FOR COMBUSTION ENGINES

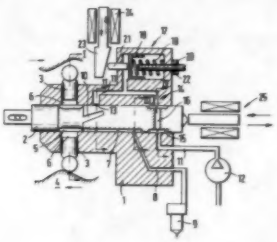
Jean Leblanc, Lyons, France, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 6, 1981, Ser. No. 260,955

Claims priority, application Fed. Rep. of Germany, May 6, 1980, 3017276

Int. Cl.³ F02M *41/02*

U.S. Cl. 123—447 8 Claims



1. A fuel injection pump for combustion engines provided with a housing having an axially displaceable distributor driven by a pump drive shaft via clutch means, said distributor having a jacket surface which is arranged to control fuel flow, said distributor further having a plurality of slotted zones and arranged to control said fuel flow to pressure lines leading or extending to said engine and a pump work chamber associated with said jacket surface, a pressure channel for fuel supply controlled by said distributor, said pressure channel being connected to a supply pump, further characterized in that a reservoir is connected to said pressure channel, said reservoir defining means for storing an exact quantity of fuel to be injected into said engine, said storing means being controlled by said distributor, said reservoir being filled during an injection stroke of the fuel injection pump and evacuated during a suction stroke of said fuel injection pump toward said pump work chamber.

4,385,611

FUEL INJECTION SYSTEM WITH FUEL MAPPING

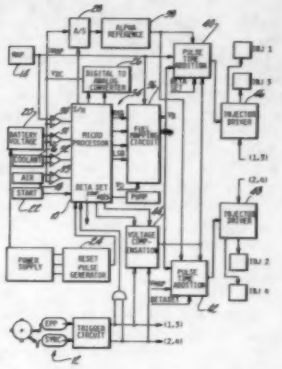
Peter W. Harper, Ramonville St. Agne, France, and Mark C. Harvey, Yorktown, Va., assignors to The Bendix Corporation, Southfield, Mich.

Filed Apr. 1, 1981, Ser. No. 249,771

Int. Cl.³ F02B *3/00*

U.S. Cl. 123—480 6 Claims

1. A fuel injection system with fuel mapping for energizing a plurality of fuel injectors for supplying controlled amounts of fuel to an engine, wherein said system comprises a plurality of sensors each sensing an engine operating condition and generating an electrical signal indicating said sensed operating condition, one of said sensors indicating manifold absolute pressure and another of said sensors indicating engine operating speed, a microprocessor adapted to receive said signals and operative in response thereto for generating a plurality of output signals including one or more digital words, a digital to analog converter receiving one of said digital words and operative to generate an analog voltage signal for generating a current control signal, pulse generating means responsive to the engine operating condition signals and the current control signal and operative to generate a pulse indicating actuation of an injector and having a pulse width proportional to the amount of fuel to be injected by the injector during the occurrence of said pulse, characterized by:



fuel mapping circuit means responsive to another one of said digital words from said microprocessor and to the signal indicating manifold pressure for generating an analog signal which is electrically connected to the pulse generating means and operative to cause the pulse width signal to be shortened in accordance with said another output digital word from the microprocessor and the manifold pressure at time of injection.

4,385,612

AIR-FUEL RATIO CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

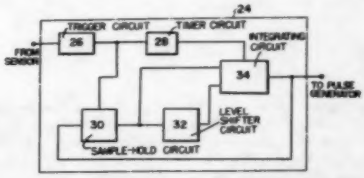
Kenji Masaki, and Hidetoshi Kanegae, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Apr. 3, 1980, Ser. No. 136,753

Claims priority, application Japan, Apr. 6, 1979, 54-40877

Int. Cl.³ F02D *5/00*

U.S. Cl. 123—489 4 Claims



1. An air-fuel ratio control system for use in an internal combustion engine including an intake passage and exhaust passage, comprising:

(a) a sensor provided in said exhaust passage of said engine for detecting the arrival of the air-fuel ratio of a mixture supplied to said engine from said intake passage at its stoichiometric level in response to the concentration of one ingredient of exhaust gases flowing thereover;

(b) fuel supply means for supplying a controlled amount of fuel into said intake passage of said engine;

(c) control means associated with said sensor for providing

first and second control signals to said fuel supply means so as to control the air-fuel ratio of said mixture, said first control signal occurring for a predetermined period of time after the air-fuel ratio arrives at the stoichiometric level to cause the air-fuel ratio to vary away from the stoichiometric level to the rich side, and said second control signal occurring with the lapse of the predetermined period of time to cause the air-fuel ratio to vary toward the stoichiometric level, thereby controlling the average air-fuel ratio on the rich side of stoichiometric, said control means comprising:

a Schmitt trigger circuit for providing a trigger pulse each time said sensor detects the arrival of the air-fuel ratio at the stoichiometric level;

a timer circuit, responsive to said trigger pulse, for providing a high output held for a predetermined period of time;

an integrating circuit;

a sample-hold circuit for sampling the output of said integrating circuit when applied with a trigger pulse from said trigger circuit and holding the output of said integrating circuit when applied with no trigger pulse;

a level shifter circuit for shifting the output of said sample-hold circuit up by a predetermined level;

said integrating circuit, responsive to a high input from said timer circuit, for integrating the output of said sample-hold circuit relative to the output of said level shifter circuit to provide said second control signal and, responsive to a low input therefrom, for passing the output of said level shifter circuit to provide said first control signal.

4,385,613

AIR-FUEL RATIO FEEDBACK CONTROL SYSTEM

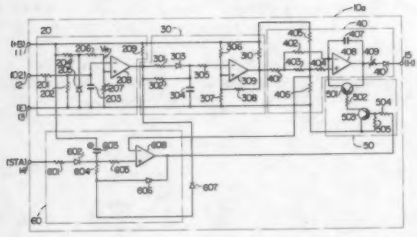
Shuzo Yoshida, Anjo; Hiroki Matsuoka, Susono; Susumu Nogami, Toyota; Hironobu Ono, Toyota; Motoharu Sueishi, Toyota, and Kazuo Ueda, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Sep. 9, 1981, Ser. No. 300,593

Claims priority, application Japan, Sep. 12, 1980, 55-127629

Int. Cl.³ F02D *5/00*

U.S. Cl. 123—489 **5 Claims**



1. A system for controlling the air-fuel ratio in an internal combustion engine including an oxygen sensor for detecting the oxygen concentration in the exhaust gas of the internal combustion engine, start switch means for generating a start signal for the internal combustion engine and a computer for controlling the amount of fuel supplied to the internal combustion engine in response to signals from said oxygen sensor and said start switch means wherein said computer comprises:

a section means including comparing means for comparing a detection signal from said oxygen sensor with a reference signal and integrating means for determining the change of fuel amount in accordance with the result of comparison at said comparing means, said section means effecting feedback control of the air-fuel ratio;

open setting means for stopping the feedback control of said feedback control section means;

holding means adapted to operate in response to the signal from said start switch means for actuating said open setting means and stopping the feedback control of said feedback control section means regardless of the engine temperature at the time of engine start, said holding means holding said condition after engine start; and

cancelling means for monitoring the condition of said oxygen sensor and cancelling the holding function of said holding means when said oxygen sensor transfers from inactive state to active state, thus starting the feedback control by said feedback control section means.

4,385,614

FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

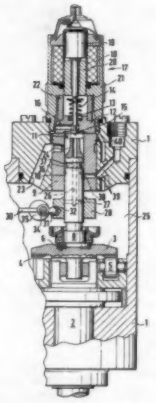
Franz Eheim; Wolfgang Geiger, both of Stuttgart, and Werner Stadler, Kornwestheim, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 3, 1980, Ser. No. 137,033

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1979, 2913909; Mar. 3, 1980, 3008070

Int. Cl.³ F02M *59/02;* **F04B** *39/10*

U.S. Cl. 123—506 **14 Claims**



1. A fuel injection pump for an internal combustion engine having a pump housing, an electromagnetic valve with a magnet and a valve seat, a pump work chamber, a relief chamber, a channel which connects said pump work chamber to said relief chamber and which includes a passage connected to and controlled by said electromagnetic valve, wherein said fuel injection pump also includes:

a threaded magnet housing in which said magnet is housed and which is threaded to said pump housing and which has an inner bore with a step, wherein the electromagnetic valve is embodied as a seat valve having a movable valve element which is connected to said pump work chamber to be biased in a closed direction by pressure prevailing in the pump work chamber, and wherein said fuel injection pump also includes:

a valve body positioned to enclose said valve seat and said movable valve element within said pump housing and having a bore which comprises a portion of said channel; and

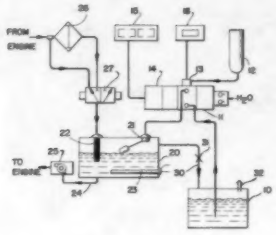
an expansible casing positioned between said valve body and said magnet housing such that said threaded magnet housing surrounds said expansible casing, whereby said casing allows for variable expansions of said valve body, said magnet housing and said pump housing occuring with temperature changes.

4,385,615

FUEL SYSTEM FOR DIESEL ENGINES

Robert S. Keane, Orange, Calif., assignor to Fuel Dimensions, Inc., Anaheim, Calif.

Filed Oct. 5, 1979, Ser. No. 82,419
Int. Cl.³ F02M *37/00*
U.S. Cl. 123—514 14 Claims



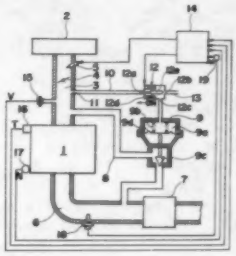
1. A fuel system for a diesel engine, comprising:
I. a diesel engine, including a fuel inlet;
II. fuel input means for the diesel engine, including:
(a.) a main fuel supply tank;
(b.) a float tank connected to the main supply tank, the float tank including:
i. heating means adapted to heat fuel within the float tank;
ii. a float control adapted to maintain a suitable fuel level within the float tank;
(c.) a supplementary fuel tank connected to the diesel engine;
(d.) a feed pump adapted to drive fuel from the main fuel supply tank to the float tank and feed supplementary fuel from the supplementary fuel tank to the engine in an amount proportional to the feed pump rate; and,
(e.) an engine pump for feeding fuel from the float tank to the fuel inlet of the diesel engine;
III. fuel recycling means, including:
(a.) a return line from the engine;
(b.) a cooler connected to the return line;
(c.) cooling means within the cooler; and,
(d.) temperature responsive valve means disposed on the return line, the valve being connected to the cooler and the float tank and being responsive to the temperature of the fuel; whereby,
A. cold fuel recycled from the engine is:
i. diverted by the valve to the float tank,
ii. mixed with incoming fuel from the main supply tank; and,
iii. the mixed fuel is heated by the heating means and then fed from the float tank to the fuel inlet of the engine;
B. hot fuel recycled from the engine is:
i. diverted by the valve to the cooler;
ii. cooled by the cooling means;
iii. forwarded to the float tank; and,
iv. the cooled fuel is mixed with incoming fuel from the main supply tank, and then fed from the float tank to the fuel inlet of the engine;
C. fuel recycled from the engine at operating temperature is:
i. diverted by the valve to the float tank;
ii. mixed with incoming fuel from the main supply tank; and,
iii. the mixed fuel is fed from the float tank to the engine inlet; and,
D. fuel is fed from the supplementary fuel tank to the engine to improve combustion characteristics.

4,385,616

AIR-FUEL MIXTURE CONTROL FOR AUTOMOBILE ENGINE HAVING FUEL INJECTION SYSTEM

Kazuo Kobayashi; Hideki Tanaka, both of Hiroshima; Katsuyoshi Iida, Higashi Hiroshima, and Junji Kamite, Hiroshima, all of Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Aug. 20, 1981, Ser. No. 294,505
Claims priority, application Japan, Sep. 1, 1980, 55-121639
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—571 3 Claims

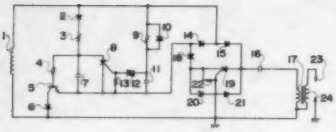


1. An air-fuel ratio control system for an internal combustion engine of a type having a fuel injection system, said control system comprising, in combination:
a fuel intake passage means having an injection nozzle for injecting a mist of fuel thereinto for the preparation of a combustible mixture in admixture with incoming air flowing therethrough and a throttle valve;
an exhaust passage means for the discharge of exhaust gases from the engine towards the atmosphere;
an EGR passage means for providing communication between the intake passage means and the exhaust passage means for recirculating a portion of the exhaust gases from the exhaust passage means into the intake passage means;
an EGR control valve means disposed in said EGR passage means for controlling the rate of flow of that portion of the exhaust gases;
a composition sensor disposed in the exhaust passage means for detecting the concentration of a component of the exhaust gases which is a function of the air-fuel mixing ratio of the combustible mixture burned in the engine;
a fuel adjusting means for controlling the amount of fuel to be injected into the intake passage means in dependence on the rate of flow the incoming air through the intake passage means, said rate of flow of the incoming air being detected by a combination of at least two of parameters including the engine speed, the negative pressure developed inside the intake passage means at a position downstream of the throttle valve with respect to the direction of flow of the combustible mixture towards the engine and the opening of the throttle valve;
a first EGR control means for controlling the EGR control valve means according to a feedback control scheme in dependence on the concentration of the exhaust gas component detected by the composition sensor; and
a second EGR control means operable when the engine operates under a particular operating condition for interrupting the feedback control scheme to close the EGR control valve means irrespective of the concentration of the exhaust gas component detected by the composition sensor.

4,385,617
OVER-ROTATION PREVENTING DEVICE FOR INTERNAL COMBUSTION ENGINES

Hiroshi Nakata, and Masao Iwata, both of Yokosuka, Japan, assignors to Oppama Kogyo Kabushiki Kaisha, Kanagawa, Japan

Filed Oct. 6, 1980, Ser. No. 193,901
Claims priority, application Japan, Aug. 25, 1980, 55/116744
Int. Cl.³ F02P 1/00
U.S. Cl. 123—602 **6 Claims**



1. An over-rotation preventing circuit for internal combustion engines having an ignition coil, comprising an exciter coil **1** for inducing a voltage corresponding to the number of revolutions of the engine, and a discharging capacitor connected to said ignition coil, a first capacitor **11** charged by the induced voltage, a switching circuit switched by the charged voltage of said first capacitor **11**, a time constant circuit including a second capacitor **7** charged and discharged by said switching circuit, a switching transistor **5** responsive to a predetermined discharge time constant of said time constant circuit and a first thyristor **19** responsive to the negative half cycle of said induced voltage to feed a high voltage to the primary winding **17** of the ignition coil via said discharging capacitor **16** when said switching transistor **5** is not operating, said switching transistor **5** being connected by its collector to ground and by its emitter to the gate of said first thyristor such that, at the time of the over-rotation of the engine, in the negative half cycle of the voltage fed to the exciter coil **1**, the negative voltage is grounded and the thyristor is delayed by the discharge time of said second capacitor.

4,385,618
PROJECTILE SHOOTING GUIDE FOR BOWS

Jim Z. Nishioka, 1268 Hemlock N.W., Salem, Oreg. 97304

Continuation of Ser. No. 775,450, Mar. 8, 1977, abandoned. This application Nov. 3, 1980, Ser. No. 203,492
Int. Cl.³ F41B 5/00
U.S. Cl. 124—24 R **4 Claims**

1. For use with a bow of the type having a bowstring and tensioning means connected to the bowstring, a projectile shooting guide comprising

(a) a support for supporting a projectile guide member, said support being mounted for use on a bow,

(b) an elongated guide member for support on a bow by said support,

(c) said guide member including forward and rearward portions and in an operative position said rearward portion extends rearwardly from said support,

(d) projectile guiding means in said guide member for guiding a projectile to be shot by a bowstring, and

(e) engaging means on said support means slidably supporting said guide member,

(f) said engaging means allowing rearward movement of said guide member while restricting rotating movement of said guide member during drawing movements of said guide member,

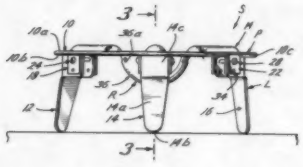
(g) said projectile guiding means including a slot for slidably receiving a portion of a projectile and extending longitudinally from said rearward portion of said guide member to and through said forward portion of said guide member,

(h) said guide member moving with a non-rotating sliding movement during drawing movements thereof.

4,385,619
PORTABLE STOVE

Dominic L. Casinelli, deceased, 2618 Glen Haven, Houston, Tex. 77025

Filed Aug. 18, 1980, Ser. No. 179,119
Int. Cl.³ F24C 1/16
U.S. Cl. 126—9 B **4 Claims**



1. A portable stove for supporting stove utensils and heating same with a fuel element, comprising:

a support plate having an upper planar surface and a lower planar surface;

plural support legs pivotally mounted with said lower surface of said support plate, said support legs for supporting said support plate;

a fuel receptacle provided by a cupped member carried integrally with said support plate for receiving the fuel element for heating the stove utensils; and said cupped member only extending below said lower planar surface of said support plate; said fuel receptacle extending below said lower surface of said support plate and being formed having a plurality of openings for permitting proper amounts of air to flow to the fuel element for combustion thereof, said openings being spaced above the bottom of said fuel receptacle and a predetermined amount below said lower surface of said support plate for enhanced combustion of the fuel element, and

spacer means associated with said support plate for spacing the stove utensil a predetermined distance from said upper surface of said support plate for proper heating thereof and said spacer means provided by raised members carried integrally by said support plate and extending only above said upper planar surface.

4,385,620
METHOD AND MEANS FOR HEATING BY WOOD BURNING

Milton W. Black, Box 64, Gibbon, Minn. 55335

Continuation of Ser. No. 96,486, Nov. 21, 1979, abandoned, which is a division of Ser. No. 935,370, Aug. 21, 1978, Pat. No. 4,201,185. This application Nov. 12, 1981, Ser. No. 320,452
Int. Cl.³ F24C 1/14
U.S. Cl. 126—77 **1 Claim**

1. A method for facilitating more complete burning of wood in a furnace having a firebox with a grate in the lower portion thereof and a flue opening in the upper portion thereof, said firebox also having opposite side walls and opposite forward and rearward walls; said method comprising:

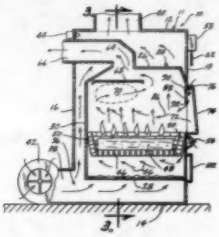
introducing air into said firebox below said grate through a main draft opening;

burning said wood on said grate in a primary combustion area located above and adjacent to said wood to cause hot

gases of a first temperature to rise from said gate towards said flue opening, said gases comprising partially combusted wood by-products;

deflecting and temporarily delaying the passage of hot rising gases adjacent the upper portion of said firebox prior to exiting of said rising gases through said flue opening, said delay being caused by a horizontal baffle having spaced apart forward and rearward edges and opposite side edges, said side edges being connected to said side walls of said firebox, said baffle being located below said flue opening in a position which blocks direct entry of said rising gases into said flue opening and which causes said rising gases to pass only about said forward and rearward edges of said baffle;

introducing additional air into said firebox below said baffle through a secondary draft opening above said grate;



preventing the exit of smoke through said secondary draft opening by placing a smoke damper in close spaced relation over the interior of said secondary draft opening;

preheating said additional air by requiring said air to pass below said smoke damper;

mixing said additional air with hot gases rising from said firebox below said baffle to cause oxygen to be provided and mixed with hot gases below said baffle to facilitate further burning of gases in a secondary combustion area located below said baffle whereby said further burning of said gases below said baffle causes formation of a hot spot below said baffle, said hot spot having an elevated temperature higher than said first temperature, and said elevated temperature being approximately 1150° Farenheit.

4,385,621

OIL STOVE FOR BURNING WASTE OIL AND NORMAL HEATING OIL

Walter Kroll, 42 Burgstaller Strasse, 7141 Kirchberg, Murr, Fed. Rep. of Germany

Division of Ser. No. 54,954, Jul. 5, 1979, Pat. No. 4,308,854. This application Sep. 10, 1981, Ser. No. 301,021

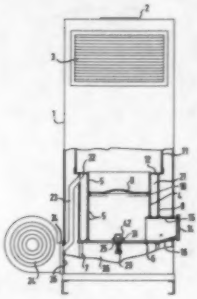
Claims priority, application Fed. Rep. of Germany, Jul. 24, 1978, 2832389

Int. Cl.³ F24C *5/00*

U.S. Cl. 126—93 **8 Claims**

1. An oil stove for burning oils and in particular waste oil, the stove comprising: an external housing, a first primary combustion chamber defined by a pot having a side wall and air inlet openings in said side wall, a substantially closed base, a burner ring, means locating the burner ring towards the upper end of said pot, said pot being surrounded by a closed jacket spaced from said side wall to define a space therebetween, a secondary combustion chamber adjoining and of larger diameter than said pot, said primary and secondary combustion chamber being located in said housing, a fan, duct means for supplying air from said fan to said space, an oil supply tank, a substantially centrally disposed oil supply line leading from said oil supply tank to said oil supply opening via a positive displacement metering pump, and a sediment deflector located within said pot spaced apart from said base and above said oil supply opening, a cleaning access door provided within said housing substantially adjacent said substantially closed base, there being a tunnel communicating between said cleaning access door and and the interior of said pot, the base of the tunnel being inclined with a relatively shallow angle to said substantially closed base whereby sediment collecting in said pot can be removed therefrom.

8. An oil stove for burning oils, and in particular waste oil, the stove comprising an external housing, a first primary combustion chamber defined by a pot having a side wall and air inlet openings in said side wall, a substantially closed base, a burner ring, means locating the burner ring towards the upper end of said pot, said pot being surrounded by a closed jacket spaced from said side wall to define a space therebetween, a secondary combustion chamber adjoining and of larger diameter than said pot, a fan, duct means for supplying air from said fan to said space, an oil supply tank, a substantially centrally



disposed oil supply opening in said substantially closed base, an oil supply line leading from said oil supply tank to said oil supply opening via a positive displacement metering pump, and a control for varying the output of said stove and comprising means for simultaneously varying both the speed of said positive displacement pump and the speed of said fan, said primary and secondary combustion chambers being located within said housing and said second duct means being arranged to blow a stream of cold air from said fan across the underside of said substantially closed base to cool the same irrespective of the viscosity of the oil being burned, there being wall means of said housing defining a flow passage for subsequently guiding said stream of cold air past said closed jacket and said secondary combustion chamber, whereby to warm said air for heating purposes without said air coming into contact with gases formed by combustion of said oil.

4,385,622

FIREPLACE LINER INCORPORATING THERMAL EXPANSION STRESS RELIEF SPACERS

Joe D. Tidwell, 3513 Brentford Way, Modesto, Calif. 95356

Continuation of Ser. No. 111,480, Jan. 11, 1980, abandoned. This application Jul. 31, 1981, Ser. No. 289,006

Int. Cl.³ F24B *1/18, 7/00*

U.S. Cl. 126—120 **3 Claims**

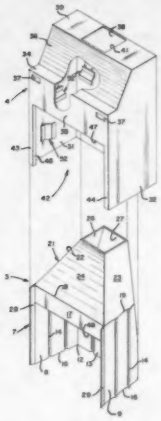
1. A prefabricated metallic firebox for a fireplace structure comprising:

an inner metallic liner fabricated from relatively heavy gauge metal, said inner liner having front, rear and side walls and including an opening in said front wall defining the fireplace opening and an opening at the top of said front, rear and side walls constituting a flue opening for passage of products of combustion from said firebox;

an outer metallic liner having front, rear and side walls corresponding to the front, rear and side walls of said inner metallic liner, the corresponding walls of said inner and outer metallic liners being spaced apart to define a passageway therebetween for the passage of air there-

through, said outer metallic liner being fabricated from sheet metal which is relatively light gauge with respect to the thickness of said inner liner and which has a thermal expansion strength insufficient to damage surrounding masonry structures when heated; and

a plurality of Z-shaped spacer baffles interposed between said corresponding walls of said inner and outer liners, each said baffle including a web portion and a flange on each opposite end of said web, said web portions extending transversely between said walls and being angularly



disposed with respect to said walls, each said baffle being fixed by means of a corresponding flange to said outer liner and impinging loosely against said inner liner and being flexible whereby when said inner liner is heated outward thermal expansion of said inner liner is accommodated by transverse displacement of said spacer baffles and accompanying lateral displacement of the flanges impinging against said inner liner, without causing an outward displacement of said outer liner, said inner liner being free to flex inwardly when heated to prevent damage to surrounding masonry structure.

4,385,623

FLUE PIPE FOR FIREPLACE STOVE

John R. Jacklich, Palo Alto, Calif., assignor to Simpson-Dura-Vent, Redwood City, Calif.

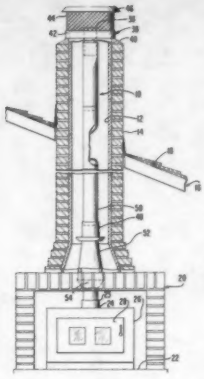
Filed Sep. 22, 1980, Ser. No. 189,253
Int. Cl.³ F24C *15/30*; F23J *11/00*
U.S. Cl. 126—126 **1 Claim**

1. A flue pipe assembly for use with a stove mounted in a fireplace, the fireplace coupled to a chimney having a flue with a narrowed damper region offset from a main flue region, the flue pipe assembly comprising:

a flue pipe having a length to permit the pipe to extend through the flue from the upper end thereof to the fireplace, said flue pipe including a first elongate portion of substantial uniform cross-sectional area in the main flue region and a second inclined portion extending downwardly from the first portion through the damper region, the second portion having a flattened section extending through the damper region, said flattened section having a rectangular cross-section, one dimension of the flattened section being greater than the other dimension thereof, the cross-sectional area of the flattened section being substantially the same as the cross-sectional area of the first portion of the flue pipe;

means at one end of the pipe for securing the pipe to the chimney at the upper end of said chimney;

connecting means at the lower end of the second portion for connecting the same to a combustion gas outlet of the stove; and a spark arrestor having means for securing the spark arrestor to said one end of the flue pipe, said spark



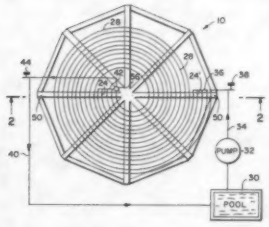
arrestor adapted to be supported in a fixed position at the upper end of the flue.

4,385,624

SOLAR COLLECTOR

Richard L. Miller, 233 Broadway, Ste. 3612, New York, N.N. 10007

Filed Jun. 15, 1981, Ser. No. 273,435
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—416 **6 Claims**



1. A solar energy water heating device for swimming pools, comprising, in combination, a supporting frame resting upon a stationary surface; at least one hose means arranged in a spiral on said supporting frame; means for mounting said at least one hose means on said supporting frame; and fluid control means for supplying water to and from said at least one hose means, whereby water in the swimming pool, and the like may be heated, wherein said supporting frame comprises a supporting surface for said at least one hose means, said supporting surface sloping from the center thereof downwardly to an edge in all directions thereof, wherein said means for mounting said at least one hose means comprises at least one spiral groove in which is placed said at least one hose means, said at least one spiral groove having a first inlet end adjacent an edge of said supporting surface, and a second outlet end adjacent the center of said supporting surface, said at least one spiral groove extending upwardly along said supporting surface from said first inlet end to said second outlet end along the length thereof, wherein said fluid control means comprises a first inlet pipe having a first end in fluid communication with a source of water to be heated, and a second end in fluid communication with said first inlet end of said at least one hose means; a second outlet pipe having a first end in fluid communication with said

source of water to return the water thereto after heating; and a second end in fluid communication with said second outlet end of said at least one hose means; and a pump for pumping water from the source of water through said first pipe means to said first inlet end of said at least one hose means, wherein said means for mounting said at least one hose means further comprises a cross-piece extending from one edge of said supporting surface to another edge of said supporting surface diametrically opposite, said cross-piece passing near the center of said supporting surface and covering a portion of said at least one spiral groove to hold said at least one hose means in said at least one spiral groove, wherein said supporting surface is cone-shaped having said center at its apex, said cross-piece comprising a first portion extending on one half of said cone-shaped supporting surface, and a second portion extending on the other half of said cone-shaped supporting surface, said first portion having a first end adjacent to said first inlet end of at least one hose means, and a second end adjacent said apex; and said second portion having a first end adjacent said apex; and said second portion having a first end adjacent an edge of said supporting surface diametrically opposed to said first end of said first portion, and a second end adjacent to said apex, said second end of said second portion lying near said second outlet end of said at least one hose means.

4,385,625

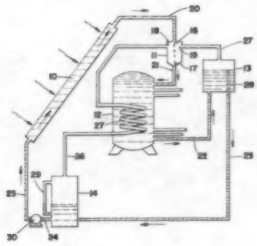
BUILDING HEATING SYSTEM

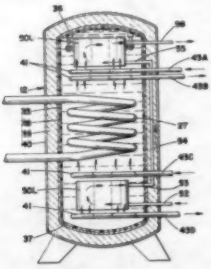
Kap-Joong Lee, 1542-10 Shinrim-Dong, Kwan AK-Ku, Seoul, Rep. of Korea

Filed Mar. 2, 1981, Ser. No. 239,489

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—433 **2 Claims**





1. A building heating system enclosing a liquid and a gas, comprising

a heat storage tank adapted to receive and store heat as said liquid passes through it,

a reservoir partly filled with said liquid,

first conduit means communicating with said heat storage tank and said reservoir and serving to conduct said liquid therebetween,

a drain tank, partly filled with said liquid, and located such that the surface of said liquid in said reservoir is at a higher position than the surface of said liquid in said drain tank,

second conduit means extending from the vicinity of the surface of said liquid in said reservoir to said drain tank, whereby if the liquid level in said reservoir rises, some of said liquid contained in said reservoir will flow into said second conduit means and thence into said drain tank,

a solar heat collector through which said liquid may pass,

third conduit means connecting said drain tank to said solar heat collector,

means of urging said liquid from said drain tank towards said solar heat collector,

an exchange tank provided with a first port, a second port, a third port and a fourth port,

fourth conduit means connecting said solar heat collector to said first port of said exchange tank,

fifth conduit means connecting said second port of said exchange tank to said heat storage tank, and

sixth conduit means communicating among said third and fourth ports of said exchange tank and the upper portions of said reservoir and said drain tank, whereby said gas flow may flow freely between said exchange tank and the spaces above said liquid in said reservoir and said drain tank, and

a gas condensation means in communication with said sixth conduit means, whereby portions of said liquid which have entered the gaseous state may be condensed back to the liquid state.

4,385,626

SPECULUM FOR MEDICAL EXAMINATION WITH A NOISELESS MECHANICAL LOCKING MECHANISM

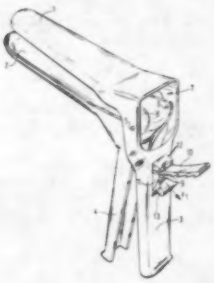
Peter Danz, CJ Haren, Netherlands, assignor to Lamaf-Kunststoffen B.V., Groningen, Netherlands

Filed Oct. 2, 1979, Ser. No. 81,299

Claims priority, application Netherlands, Oct. 12, 1978, 7810273

Int. Cl.³ A61B *1/32*

U.S. Cl. 128—17 **5 Claims**



1. A speculum comprising:

cooperating first and second spreading members movable relative to one another between a closed position, to allow for insertion thereof into a body cavity, and a discrete, adjustable open position, to allow for medical inspection of said body cavity, said spreading members each including a handle element coupled thereto for moving said spreading members between said open and closed positions thereof; and

means for releasably locking said spreading members in optionally determinable, discrete open positions, said locking means including a first locking element and a second locking element configured for mutual, releasable engagement with one another, each of which is coupled respectively to said first and second spreading members for movement therewith, with at least one of said locking

elements being normally biased in a direction away from engagement with the other locking element, so as to require positive manual force to move said locking elements into mutual engagement and thereby releasably lock said spreading members in a desired open position, and so as to prevent undesired noises during movement of said spreading members between said open and closed positions by substantially eliminating contact between said locking elements during such movement.

4,385,627

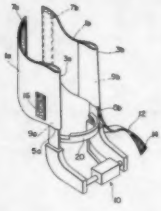
HEAD STABILIZER ACCESSORY

Gayle V. Nelson, 101 S. Cleveland, Sioux Falls, S. Dak. 57103

Filed Jul. 29, 1980, Ser. No. 173,372

Int. Cl.³ A61F *5/01*

U.S. Cl. 128—76 R **6 Claims**



1. In combination, a head immobilizing device containing a pair of horizontally adjustable, vertical elements for positioning the head therebetween and a head stabilizer accessory comprising two separate, flexible members each having at one end thereof means for securing same to respective ones of said vertical elements, said flexible members being of a length enabling the members, after securing same to said vertical elements, to be wrapped about and fastened behind said head and including means near the ends of each of said members opposite the ends containing the securing means for fastening said members together, and said flexible members tapering upwardly from said ends bearing the securing means so as to conform to and cover substantially the entire back of the head.

4,385,628

SURGICAL INSTRUMENT

Richard E. Straith, 625 Hillcrest Drive, Bloomfield Hills, Mich. 48013

Continuation of Ser. No. 142,410, Apr. 21, 1980, abandoned. This application Feb. 18, 1982, Ser. No. 349,778

Int. Cl.³ A61B *17/28;* **A61F** *5/08*

U.S. Cl. 128—92 EA **5 Claims**

1. A special purpose forceps adapted primarily for use in rhinoplasty to produce a controlled infracture of the nasal bone precisely along a line extending from a point high in the nasion to a point above and anterior to the attachment of the medial canthal ligament comprising

pivotally interconnected, essentially thin, elongate inner and outer jaws;

a pair of elongate handles each connected to a respective jaw and operative manually to move said jaws into and out of clamping engagement with each other,

said inner and outer jaws adapted to be inserted lengthwise, parallel to, and at the inner and outer sides, respectively, of said nasal bone,

said inner jaw having a transverse terminal end defining a straight-line chisel edge that is sufficiently sharp to be driven into and to penetrate the nasion to a point slightly above said proposed fracture line; and

anvil means on the handle associated with said inner jaw for use in driving said chisel edge into the nasion,

said anvil means, the pivot interconnecting said jaws, and said chisel edge being sufficiently in-line with each other so that hammer blows against said anvil means are transmitted to said chisel edge to drive the latter into the frontal process of the maxilla without significant lateral deviation of said edge,

said jaws having mutually engageable clamping surfaces adjacent to the chisel edge of said inner jaw adapted to clamp said nasal bone therebetween,

said chisel edge being of a length substantially equal to the width of said nasal bone at the proposed fracture line and said clamping surfaces being a width to engage said nasal bone for a substantial portion of its width near said proposed fracture line,

whereby, when said nasal bone is clamped between said jaws and the forceps is manipulated to turn or pivot generally about said chisel edge and simultaneously to apply pressure longitudinally upwardly against said bone, a controlled infracture of the latter occurs parallel to said chisel edge without significant avulsion and tearing of the periosteum and muscle attachments in the area of the nasion.

4,385,629

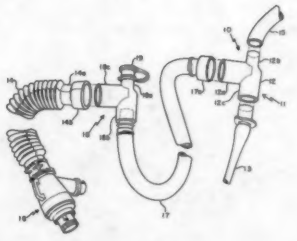
PORTABLE EMERGENCY RESPIRATORY SYSTEM

E. George Wolf, Jr., 4730 Whitewood Ct., and Charles E. Cox, 4333 Rosegarden Ct., both of Dayton, Ohio 45424

Filed Feb. 12, 1981, Ser. No. 234,053

Int. Cl.³ A61M *25/00*

U.S. Cl. 128—207.14 **6 Claims**



1. An emergency respiratory system for administering oxygen therapy and treating an individual in respiratory failure, comprising: an endotracheal adaptor unit having a fluid passage; an endotracheal tube attached to said adaptor unit and communicating with said fluid passage, said endotracheal tube insertable within the windpipe, trachea, or esophageal airway of an individual undergoing treatment; pressurized oxygen delivery means attached to said adaptor unit and communicating with said fluid passage for introducing relatively high pressure oxygen into said fluid passage; and pressure-applying and directing means attached to said adaptor unit and communicating with and providing a continuation of said fluid passage away from that of said endotracheal tube, said last-named means including a single flexible tubing having one end attached to said adaptor unit and the other end opening to the

atmosphere, said flexible tubing being manually squeezable to a first, compressed position to shut off the flow of pressurized oxygen through the continuation of said fluid passage formed by said flexible tube and positively redirect the flow through said endotracheal tube to inflate the individual's lungs, and releasable to a second, tube-expanded condition to provide for the expiration of the lungs through the said flexible tubing.

4,385,630

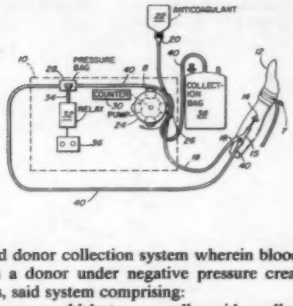
BLOOD DONATION UNIT

Ronald O. Gilcher, Edmond, Okla.; Allen Latham, Jr., Jamaica Plain, Mass.; Jonathan D. Schiff, Boston, Mass., and Donald W. Schoendorfer, Brookline, Mass., assignors to Haemonetics Corporation, Braintree, Mass.

Filed Aug. 29, 1980, Ser. No. 182,510

Int. Cl.³ A61M *5/00*

U.S. Cl. 604—31 **9 Claims**



1. A blood donor collection system wherein blood is withdrawn from a donor under negative pressure created by a pump means, said system comprising:

a pump means, a phlebotomy needle, said needle having a length L (in centimeters) and an inner radius R (in centimeters), said needle also having a first end insertable into said donor and a second end coupled to junction means, said junction means joining said needle with both a first end of first conduit means and a first end of second conduit means, said first conduit means having a second end thereof connected to a whole blood collection bag and said second conduit means having a second end thereof connected to a bag at least partially containing anticoagulant, said pump means being disposed to achieve a flow rate Q of blood at least on the order of 70 ml per minute by maintaining an essentially constant negative pressure differential ΔP of at least about 168 cm of water across the length L of the interior of said needle, said flow rate Q governed to a first order approximation in low Reynold's number flow by the Hagen-Poiseulle Formula:

$$Q=\Delta P\pi R^4/8\ \mu L$$

where μ is the viscosity of blood (in gram/cm-sec).

4,385,631

CATHETER

Ulrich Uthmann, Schulstrasse 5, 6936 Haag, Fed. Rep. of Germany

Filed Mar. 18, 1981, Ser. No. 245,111

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1980, 3010841

Int. Cl.³ A61M *5/32*

U.S. Cl. 604—284 **13 Claims**

1. Catheter with two lumens for puncturing blood vessels, particularly in hemodialysis, comprising: two separate channels, one of each channels for supplying blood to, and the other for returning blood from, external circulation; said channels running side by side through a section with a point that can be inserted through a puncture into the blood stream and being axially separated at the other end; a longitudinal guide; each channel comprising an individual catheter slidable back and forth against the other channel inside said longitudinal guide; each channel being positionable at a predetermined location

relative to the other channel dependent upon predetermined conditions.

4,385,632

GERMICIDAL ABSORBENT BODY

Sven O. Odelhög, Vreta Kloster, Sweden, assignor to Landstingens Inköpscentral, Solna, Sweden

Filed Sep. 14, 1981, Ser. No. 302,082

Claims priority, application Sweden, Sep. 17, 1980, 8006516

Int. Cl.³ A61F *13/16*; A61K *49/04*; B32B *23/08*

U.S. Cl. 604—360 **2 Claims**

1. An odor-inhibiting and germicidal absorbent body for collecting urine or feces, said body comprising cellulose fibers or wadding, wherein the fibers or wadding at one surface of said body which, in use, first comes into contact with urine or feces are impregnated with an odor-inhibiting and germicidal solution consisting of an aqueous solution of a water-soluble copper salt selected from the group consisting of copper formate, copper oxalate, copper tartrate, copper citrate, copper lactate, copper sulfate, copper chloride, copper acetate and copper borate, said copper salt being concentrated in said fibers or wadding at said one surface such that there is present at least 150 μg copper per milliliter of the liquid volume which said absorbent body is dimensioned to absorb.

4,385,633

TEAT DILATOR

Francis W. Child, Eagle Bend, Minn., assignor to Child Laboratories Inc., Cody, Wyo.

Continuation-in-part of Ser. No. 185,179, Sep. 8, 1980, Pat. No. 4,346,714, which is a continuation-in-part of Ser. No. 55,994, Jul. 9, 1979, Pat. No. 4,281,658. This application Jun. 25, 1981, Ser. No. 277,278

The portion of the term of this patent subsequent to Aug. 4, 1998, has been disclaimed.

Int. Cl.³ A61M *29/00*

U.S. Cl. 604—104 **21 Claims**

1. A dilator for the teat of a female mammal, said teat having a longitudinal duct in communication with a duct outlet in the end of the teat comprising: body means of soft flexible material having a passage adapted to be positioned in the duct outlet to allow fluid to flow through the end of the teat, annular flange means on said body means engageable with the end of the teat when the means secured to the body means is inserted in the duct, at least one ring means on said body means positioned above said annular flange means forming therebetween a channel for accommodating a part of the lower end of the teat when the body means is located in the teat duct, and one-way valve

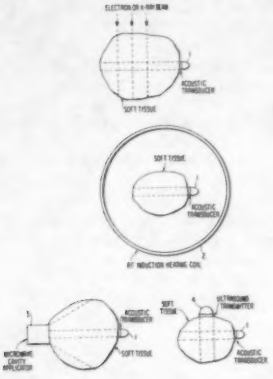
means mounted on said annular flange means for allowing fluid to flow out of the duct through said passage of the body means to discharge the fluid externally of the teat, said one-way valve means having at least a pair of flexible side walls surrounding a valve chamber open to said passage of the body means, said side walls projecting from the body means and extended toward each other, said side walls having cooperating lips surrounding a normally closed mouth to restrict entrance of external foreign substances into the passage of the body means and the duct of said teat.

4,385,634

RADIATION-INDUCED THERMOACOUSTIC IMAGING

Theodore Bowen, Tucson, Ariz., assignor to University of Arizona Foundation, Tucson, Ariz.

Filed Apr. 24, 1981, Ser. No. 257,166
Int. Cl.³ G01K *1/00*
U.S. Cl. 128—653 **27 Claims**



1. A method of radiation-induced thermoacoustic imaging to non-invasively detect the composition and structure of a body, comprising the steps of

inducing within a volume under investigation in said body a sudden thermal stress by a pulse of radiation which deposits its energy causing a rapid, but very small, rise in temperature throughout said volume, and

receiving the thermoacoustic signal emitted from within said volume as a result of the induced sudden thermal stress, thereby producing an image of inhomogenieties within said volume.

4,385,635

ANGIOGRAPHIC CATHETER WITH SOFT TIP END

Oscar F. Ruiz, 3655 Bay Homes Dr., Coconut Grove, Fla. 33133

Continuation-in-part of Ser. No. 143,891, Apr. 25, 1980, abandoned. This application May 15, 1981, Ser. No. 264,048
Int. Cl.³ A61B *6/00*
U.S. Cl. 128—658 **1 Claim**

1. An angiographic catheter having a soft flexible pliable leading tip zone comprising urethane and forming a non-traumatic catheter tip, said tip zone being of an axial length in the range of between 1 and 7 millimeters, said catheter comprising a main reinforced length and an intermediate zone between the tip zone and the main length, said main length of said catheter including an inner tube of a polyamide jacketed by urethane, said intermediate zone comprising a tapered end zone of said inner tube of polyamide tapering to zero to provide decreasing stiffness between said main length and said tip zone and said intermediate zone is jacketed by urethane,

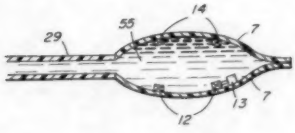
said intermediate zone, said main length and said tip zone being of an overall wall thickness substantially common throughout the axial length of the tip zone, intermediate zone and adjacent main length, wherein a soft flexible pliable leading tip zone is provided and a relatively flexible intermediate zone is provided for said catheter.

4,385,636

TELEMETRIC DIFFERENTIAL PRESSURE SENSOR WITH THE IMPROVEMENT OF A CONDUCTIVE SHORTED LOOP TUNING ELEMENT AND A RESONANT CIRCUIT

Eric R. Cosman, 872 Concord Ave., Belmont, Mass. 02178

Division of Ser. No. 908,615, May 23, 1978, abandoned, which is a continuation-in-part of Ser. No. 697,951, Apr. 13, 1978, abandoned, which is a continuation-in-part of Ser. No. 697,948, Apr. 13, 1978, abandoned. This application Feb. 5, 1981, Ser. No. 231,707
The portion of the term of this patent subsequent to Aug. 4, 1998, has been disclaimed.
Int. Cl.³ A61B *5/10*
U.S. Cl. 128—748 **9 Claims**



1. An in vivo pressure sensor adapted for in vivo calibration, said sensor comprising:

(a) a flexible housing defining a chamber therein;

(b) inlet means allowing the entrance into said chamber of a bodily fluid the pressure of which is to be sensed when said sensor is implanted in the living body, said flexible housing being so adapted that when the sensor is implanted beneath the skin, at least a portion of the outside of said flexible housing is positioned to be adjacent to and facing an interior portion of skin whereby said outside portion of the housing is in mechanical pressure communication with the skin and whereby pressures external to the body and applied to the skin can be mechanically communicated across the skin to the outside of said flexible housing and so that changes in the differences in pressures inside said chamber and outside said housing will cause a distortion of said flexible housing;

(c) mechanical stop means located within said flexible housing for preventing further distortion of the flexible housing when the pressure outside of the flexible housing equals or exceeds the pressure inside said chamber by a predetermined relationship;

(d) means located within said flexible housing having a preselected parameter that is detectable by apparatus located outside the living body, said means having a preselected parameter being at least in part cooperatively connected to said flexible housing so that said preselected parameter will change with the movement of said flexible housing, said parameter being detectable at least when said flexible housing is at said mechanical stop means and said parameter changing upon at least a distortion of said flexible housing from said mechanical stop means whereby when said sensor is implanted beneath the skin, said flexible housing can be driven to said mechanical stop means by a pressure external to the living body applied to the skin adjacent to said sensor and said preselected pa-

rameter can be determined at said mechanical stop means after implantation, and whereby the magnitude of the external pressure applied to the skin required to drive said single diaphragm means to said mechanical stop means is a function of the pressure in said internal bodily region.

4,385,637

BLOOD SAMPLER

David S. Akhavi, Los Angeles, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Division of Ser. No. 25,980, Apr. 2, 1979, Pat. No. 4,266,559. This application Dec. 29, 1980, Ser. No. 220,576

Int. Cl.³ A61B *5/14*

U.S. Cl. 128—763 **14 Claims**

6. An arterial blood sampler comprising: a needle having a hollow hub; a flexible plastic blood reservoir connected to a needle adapter having a tubular section that extends inside both the reservoir and the hollow hub of the needle, and the tubular section of the adapter has internally beveled ends so as to reduce turbulence of blood flow into the sampler; a coating on the reservoir that is substantially impervious to blood gas; and gas within the blood reservoir; a vent on the reservoir through which such gas can be expelled by means of arterial blood pressure; and valve means on the vent preventing the escape of arterial blood from the reservoir.

4,385,638

HAIR DYEING INSTRUMENT

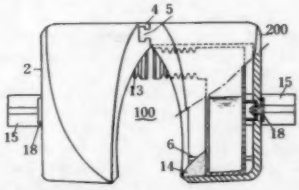
Kinichi Hasegawa, 3543-2 Motoishikawa-cho, Midori-Ku, Yokohama-shi, Kanagawa-Ken, Japan

Filed Jul. 9, 1981, Ser. No. 281,896

Claims priority, application Japan, Jul. 29, 1980, 55-104078

Int. Cl.³ A45D *19/00*

U.S. Cl. 132—88.5 **19 Claims**



1. A hair dyeing device comprising:

an outer housing, including first and second detachably joined segments, having opposite front and rear ends, a bottom surface and first and second side surfaces extending upward from said bottom surface on said first and second segments, respectively, and having a longitudinally extending passage formed between said first and second segments, open along said bottom surface, to define a longitudinally extending gap therein and opening at said front and rear ends for allowing a bundle of hair to be guided therethrough from said front end to said rear end;

said first and second segments respectively having opposing first and second chambers formed therein opening into said passage;

an inner housing, including opposing first and second parts respectively in said first and second chambers, slidable toward and away from each other in said first and second chambers, said first and second parts being contractable in response to sliding movement thereof;

first and second hair dye feeding means, respectively coupled to said first and second parts for sliding movement therewith, for feeding hair dye to the bundle of hair in said passage in response to the contraction of said first and second parts;

said first and second hair dye feeding means respectively including first and second hair dye receptacles for storing the hair dye and first and second arrays of hair dyeing teeth in respective fluid communication with said first and second receptacles, engagable with the bundle of hair for delivering the dye to the bundle of hair; and means for sliding said first and second parts toward and away from each other.

4,385,639

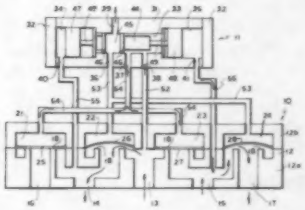
SELF-CYCLING VALVE

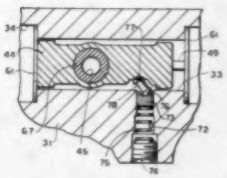
Peter A. Holborow, Hopatcong, N.J., assignor to Automatic Switch Co., New Jersey

Filed Dec. 8, 1980, Ser. No. 214,354

Int. Cl.³ G05D *16/10*

U.S. Cl. 137—106 **4 Claims**





1. A self-cycling valve including a main valve and an operator valve,

the main valve comprising:

(a) a main valve body having fluid pressure inlet and exhaust ports and first and second outlet ports, and

(b) main valve means within the body for controlling communication between each outlet port and the inlet and exhaust ports, and

the operator valve comprising:

(c) an operator valve body, the interior of the body communicating with the fluid pressure inlet port and with the main valve means in the main valve body,

(d) a valve member movable within the operator valve body,

between first and second extreme positions, for controlling operation of the main valve means, the first and second outlet ports communicating with the inlet and exhaust ports, respectively, when the operator valve member is in its first extreme position and the first and second outlet ports communicating with the exhaust and inlet ports, respectively, when the operator valve member is in its second extreme position,

(e) means responsive to an increase in pressure above a predetermined value at the first outlet port for moving the operator valve member from its first extreme position to its second extreme position, and means responsive to an increase in pressure above a predetermined value at the second outlet port for moving the operator valve member from its second extreme position to its first extreme position, and

(f) means for resiliently biasing the operator valve member into each of its extreme pistons, said resilient biasing means including a detent pivotally arranged with respect to the operator valve member and resilient means biasing the detent along a line of force transverse to the direction of movement of the operator valve member, the detent being arranged at an acute angle to the direction of movement of the operator valve member when that member is in either of its extreme positions, and the detent moving through a position in which it is perpendicular to the direction of movement of the operator valve member as the latter moves from each of its extreme positions to the other, whereby the force of the biasing means tending to hold the operator valve member in each of its extreme positions decreases during the movement of the operator valve member from that extreme position to the midpoint of its travel and increases during the movement of the operator valve member from the midpoint of its travel to the other extreme position.

4,385,640

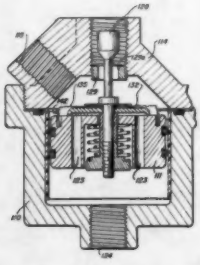
HYDRAULIC UNLOADER

Jacob E. Iverson, Pompano Beach, Fla., assignor to Thomas D. McKane, Lauderdale-by-the-Sea, Fla. and John H. Burt, Atlanta, Ga., part interest to each

Continuation-in-part of Ser. No. 181.127, Aug. 25, 1980, abandoned. This application May 12, 1981, Ser. No. 262,825

Int. Cl.³ G05D *7/01*

U.S. Cl. 137—117 **5 Claims**



1. A hydraulic pressure unloader for connection between a pump and a hydraulic load, said unloader comprising:

a housing defining a cylinder;

a piston movable in said cylinder and dividing the cylinder into two chambers, an inlet chamber having a pressure inlet for connection with said pump and a bypass outlet, and an outlet chamber having a pressure outlet for connection with said hydraulic load, said piston having a passage therethrough for flow of hydraulic liquid from the inlet to the pressure outlet;

a piston rod extending from said piston through said bypass outlet, having a bypass valve at the end thereof, movement of said piston toward the bypass outlet opening the bypass valve and movement of the piston away from the bypass outlet closing the bypass valve, the flow of liquid through the piston from the inlet to the pressure outlet establishing a pressure differential across the piston to close the bypass valve, the pressure in the outlet chamber acting on a larger piston surface than does the pressure in the inlet chamber, whereby when the pressures in the two chambers are the same, the bypass valve is opened;

a gate valve on the piston rod between the piston and the bypass valve, the piston being movable on the rod toward and away from said gate valve;

a spring urging the piston against the gate valve to close the flow passage to the piston, liquid flow from the inlet to the pressure outlet moving the piston away from the gate valve against the spring to establish the differential pressure between the inlet and outlet chambers;

a threaded nut at the end of the piston rod remote from the bypass valve said spring being seated on said nut; and

a spacer on the piston rod extending through the piston from the nut to the gate valve, the length of the spacer determining the spring force acting between the gate valve and piston.

4,385,641

THREE-PASSAGE VALVE

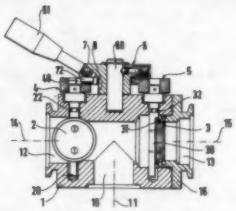
Michel Albertin, Annecy-le-Vieux, and Lucien Lavorel, Annecy, both of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Feb. 13, 1981, Ser. No. 234,146

Claims priority, application France, Feb. 13, 1980, 80 03177

Int. Cl.³ F16K *31/52, 1/22*

U.S. Cl. 137—636.1 **1 Claim**



1. A three-passage valve comprising: a body with a main passage and two secondary passages, each of said secondary passages being fitted with a respective closure member, said valve as a whole being provided with a single, common actuator unit to operate the closure member in such a manner that the valve can occupy any one of three positions: a first position in which the main passage is in communication with a first one of the secondary passages while the other secondary passage is closed; a second, or intermediate position in which both of the secondary passages are closed; and a third position in which said first passage is closed while the main passage is in communication with said other secondary passage; said secondary passages being located on opposite sides of the valve body and having a common axis with said closure members of said secondary passages being rotatably mounted on respective axles which are parallel to each other, respective closure member drive cams being fixed to said closure members, the actuator unit being rotatably mounted on an axle that is parallel to said closure member axles and which is located in between them, said parallel axles being perpendicular to the common axis of the secondary passages, the actuator unit including a drive plate fitted to rotate about said actuator unit axle and fitted with two drive studs, each stud being engageable with a slot in the drive cam of a respective one of the closure members, and the drive plate being fitted with a central cam which, for each

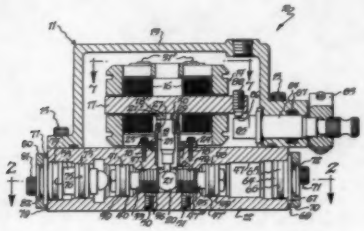
of the secondary passages, has a locking sector and a release sector which co-operate with associated profiles of the drive cams depending on the positions to which they are rotated by the drive stud, and wherein the drive cams include stops to lock them in their open position, said stops engaging the drive stud used to drive the other drive cam.

4,385,642

BI-STABLE ELECTRICALLY OPERATED VALVE

William P. Robinson, Lockport, N.Y., assignor to Hydraulic Servocontrols Corporation, Buffalo, N.Y.

Filed Jan. 19, 1981, Ser. No. 226,078
Int. Cl.³ F16K *31/12, 31/02*
U.S. Cl. 137—885 **21 Claims**



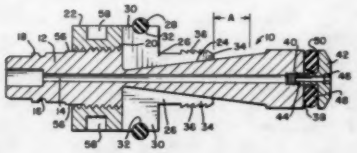
1. An electrically operated valve comprising a housing; an electro-mechanical transducer in said housing, an inlet conduit in said housing; a return conduit in said housing; an outlet conduit in said housing; an intermediate conduit for effecting communication between said inlet conduit and said return conduit; first, second and third valve seats in said housing; first valve means operatively coupled to said electromechanical transducer for selective movement to an open position by moving away from said first valve seat and onto said second valve seat for effecting communication between said inlet conduit and said outlet conduit and for movement to a closed position by moving away from said second valve seat and onto said first valve seat; and second valve means responsive to said first valve means being in said open position and on said second valve seat for moving onto said third valve seat for terminating communication between said intermediate conduit and said return conduit and responsive to said first valve means being in said closed position and away from said second valve seat for effecting communication between said inlet conduit and return conduit through said intermediate conduit.

4,385,643

PLUG FOR HIGH-PRESSURE TESTING OF TUBES

Renato R. Noe, 1609 West St., Union City, N.J. 07087

Filed Sep. 16, 1981, Ser. No. 302,844
Int. Cl.³ F16L *55/10;* **G01M** *3/02*
U.S. Cl. 138—90 **14 Claims**



1. A plug, for high-pressure testing of tubes, comprising:
an elongate body;
said body having a passage formed internally thereof and extending throughout the full length of said body;
said body further having means defining an external ramp surface integral therewith;
a plurality of jaws externally and independently engaged with said body, intermediate the length of said body, and movable axially thereof for travel along said ramp surface;
means constraining said plurality of jaws in engagement with said body;
said ramp surface having a plurality of increasing outside diameters;
means engaged with said body operative for moving said pluraliy of jaws axially of said body and along said ramp surface;
means defining an expandable seal;
said seal and one end of said body having means cooperatively coupling said seal to said one end; and
said seal having means, cooperative with said coupling means, manipulatable to cause said seal to expand diametrically uniformly.

4,385,644

COMPOSITE LAMINATE JOINT STRUCTURE AND METHOD AND APPARATUS FOR MAKING SAME

Charles E. Kaempen, Orange, Calif., assignor to Plastonics International Inc., Ohio

Filed Jan. 11, 1982, Ser. No. 338,526
Int. Cl.³ F16L *9/00;* **B65H** *81/00;* **F16L** *25/00;* **B32B** *5/12*
U.S. Cl. 138—109 **4 Claims**

1. A composite laminate joint structure disposed on a horizontal axis thereof comprising
a first ply of tensioned and compacted unidirectional continuous first filament strands disposed generally in a direction perpendicular to said axis, said first ply configured to have at least one end of sufficient thickness to provide an exterior surface tapered at an angle of between 5° and 15° when viewed in cross section relative to said axis,
a second ply of tensioned and compacted unidirectional continuous second filament strands having a uniform thickness disposed transversely of and superimposed over said first ply and extending generally in the direction of said horizontal axis, said second ply having at least one end formed upon the exterior tapered surface of said first ply to provide said second ply with a taper when viewed in cross section relative to said horizontal axis,
a third ply of tensioned and compacted unidirectional continuous third filament strands disposed transversely of and superimposed over said second ply and extending generally in a direction perpendicular to said horizontal axis, said third ply configured to have a flange on the tapered end of said second ply,
hardened adhesive means impregnating and bonding said first, second and third plies together in a common bonding matrix to maintain them in a flanged and tapered end laminate joint configuration.

2. The invention of claim 1 wherein said composite structure is generally cylindrical and the taper angle of said first and second laminate plies is within a range of included angles of from 5° to 15°.

4. A method for making a composite laminate joint structure along a longitudinal axis thereof comprising the steps of
disposing a first ply of continuous first filament strands to extend in a direction substantially perpendicular to said longitudinal axis,

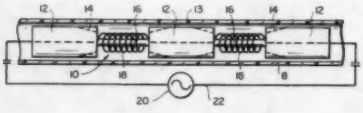
collimating said first filament strands upon a removable forming surface or mandrel,
placing said first filament strands upon said forming surface,
applying a sufficient thickness of said first filaments at an end portion of said first ply to produce a first ply shape having a tapered end configuration, said tapered end having an angle of taper preferably ranging between 5° and 15°,
disposing a second ply of continuous second filament strands to extend in the direction of said longitudinal axis,
gripping the ends of said second filament strands by a gripping means to maintain them in a semi-taut condition,
applying said second filament strands transversely across the exterior surface of said first ply,
disposing a third ply of continuous third filament strands to extend in a direction substantially perpendicular to said longitudinal axis,
applying said third filament strands transversely across said second filament strands to impose a substantially uniform load thereon to tension said second filament strands and press them firmly against first filament strands comprising the exterior and tapered surface of said first ply to form a third ply laminate having a tapered end configuration,
positioning a removable flange forming structure at an end of said third ply,
placing sufficient additional third filament strands in contact with said removable flange forming structure to configure an end of said third ply into a flange,
impregnating all of said first, second and third filament strands with a liquified adhesive means,
partially curing and hardening said adhesive means to maintain said first, second and third filament strands in tension,
disconnecting the ends of said second filament strands from said gripping means,
removing said flange forming structure,
removing said forming surface or mandrel from the completed composite laminate joint structure.

4,385,645

METHOD FOR USE IN MAKING A SELECTIVELY VAPOR DEPOSITION COATED TUBULAR ARTICLE, AND PRODUCT MADE THEREBY

Bruce D. Campbell, Portola Valley, and Lynn O. Chapman, Atherton, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Division of Ser. No. 247,042, Mar. 24, 1981, Pat. No. 4,354,456. This application Jul. 6, 1982, Ser. No. 395,226
Int. Cl.³ F16L *11/00*
U.S. Cl. 138—139 **6 Claims**



1. A method for vapor deposition coating a selected area of the interior of a tubular article, the steps comprising:
providing a tubular article having a longitudinal axis;
inserting vapor deposition coating means and masks within the article, the masks having opposed axially aligned spaced apart planar masking surfaces which are generally perpendicular to the longitudinal axis, the vapor deposition coating means being disposed axially between the opposed surfaces;
evacuating area between masks to be coated; and
activating the vapor deposition coating means to deposit, in a radial fashion, a generally uniform coating on the interior surface of article between the opposed masking surfaces.

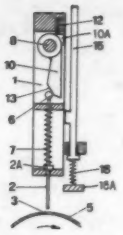
2. An article made by the method of claim 1.

4,385,646

READING AND LIFTING DEVICE FOR A CONTROL MACHINE

Walter Kleiner, Hirzel-Zuerich, Switzerland, assignor to Staeubli Ltd., Horgen-Zuerich, Switzerland

Filed Feb. 23, 1981, Ser. No. 236,482
Int. Cl.³ D03J *1/00*
U.S. Cl. 139—331 **6 Claims**



1. A reading and lifting device which is responsive to a pattern card having perforated and nonperforated points, comprising a force amplifying assembly supported for movement toward and away from said pattern card in a first direction between first and second positions, said force amplifying assembly being closer to said pattern card in said second position than in said first position, a reading needle projecting toward and engageable with said pattern card and supported on said force amplifying assembly for movement relative thereto between an initial position and an actuated position, means for yieldably urging said reading needle toward said initial position thereof, engagement of said needle with a nonperforated point of said pattern card as said force amplifying means moves from said first to said second position causing said needle to move from said initial position to said actuated position, a control member independently supported adjacent said force amplifying assembly for movement between an initial position and an advanced position in directions approximately parallel to said first direction, means responsive to movement of said needle relative to said force amplifying assembly for operatively coupling said force amplifying assembly and said control member when said needle is in one of said initial and actuated positions for effecting movement of said control member from said initial position to said advanced position in response to movement of said force amplifying assembly from said first to said second position, and means for moving said control member to said initial position thereof as said force amplifying assembly moves from said second to said first position.

4,385,647

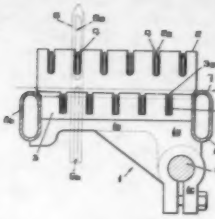
WARP STOP MOTION

Narachiyo Nishiguchi, Osaka, Japan, assignor to Nishiki Sangyo Kabushiki Kaisha, Osaka, Japan

Filed Feb. 26, 1981, Ser. No. 238,610
Claims Priority, application Japan, Mar. 4, 1980, 28524, Mar. 5, 1980, 29311
Int. Cl.³ D03D *51/28*
U.S. Cl. 139—369 **4 Claims**

1. A warp stop motion for looms comprising a pair of side frames supporting in side-by-side and vertically spaced relation, a plurality of contact bars, a plurality of separator bars holding a number of droppers, a front guide tube and a horizontal shaft extending between said side frames perpendicularly to the direction in which warp yarns pass, each of said

side frames being of inverted L-shape with the lower end of the inverted L serving as a base for attachment to said horizontal



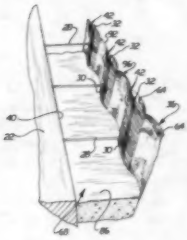
shaft, and said guide tube being positioned substantially at the corner of the L of said side frames.

4,385,648

WOVEN FABRIC FORM ELEMENT FOR FORMING CAST-IN-PLACE STRUCTURES

Eduardo W. Bindhoff, Fairview Park, Ohio, assignor to Intrusion-Prepakt, Incorporated, Cleveland, Ohio

Filed Jan. 19, 1981, Ser. No. 226,107
Int. Cl.³ D03D *1/00, 3/02;* E02B *3/12*
U.S. Cl. 139—384 R **5 Claims**



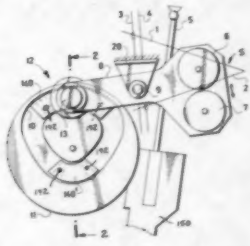
1. A woven fabric form element for use in forming a concrete body and having a first surface providing a form surface for opposed placement to a second solid material providing a second form surface separate from said woven fabric form element comprising a first set and a second set of perpendicularly related interwoven yarns which extend along first and second dimensions of the woven fabric form element and define said first surface and a corresponding outer surface of the woven fabric form element, one of said yarn sets being the weft of the woven fabric form element and the other being the warp of the woven fabric form element, the interwoven portion of the weft and warp of the fabric having sufficient tensile strength to withstand the hydrostatic pressure applied by the cementitious material and having a weave sufficiently continuous throughout said first surface to confine the cementitious material, a plurality of said first set of yarns extending substantially the extent of said first dimension and floating over a plurality of said second set of yarns at spaced intervals to provide spaced parallel rod receiving means at spaced locations adjacent said first surface of the woven fabric form element each of which extends substantially the extent of said second dimension of said woven fabric form element for receiving a rigid concrete reinforcing and fabric support rod extending substantially the extent of said second dimension of said woven fabric form element for supporting said form element as said first form surface in forming a concrete body, said plurality of first yarns at each of said spaced locations being non-interwoven with said second yarns for a distance sufficient to enable a portion of said interwoven weft and warp of said first surface in said rod receiving means to be pulled away from said plurality of non-interwoven yarns under the influence of the pressure applied against the interwoven warp and weft by the cementitious material to provide a cavity for cementitious material between the support rod in the rod receiving means and the first surface of the woven fabric form element, said plurality of non-interwoven first yarns having a porosity for passing substantial amounts of cementitious material into said cavity in said rod receiving means, and there being a sufficient number of said non-interwoven yarns spaced along the extent of each rod receiving means to support the hydrostatic pressure applied by the cementitious material during the pouring of the concrete body for which said woven fabric form element forms a first form surface.

4,385,649

DEVICE FOR PROGRAMMED CHANGE OF POSITION OF NOZZLES IN JET LOOMS

Ladislav Sevcik, Chrastava, Czechoslovakia, assignor to ELITEX, koncern textilniho strojirenstvi, Liberec, Czechoslovakia

Filed Dec. 22, 1980, Ser. No. 218,761
Claims priority, application Czechoslovakia, Dec. 22, 1979, 9242-79
Int. Cl.³ D03D *47/30*
U.S. Cl. 139—435 **9 Claims**



1. A device for the programmed change of position of at least one member of an apparatus, comprising a cam driven in synchronism with the apparatus, a cam follower, the cam having a cam path composed of a main cam path and an auxiliary cam path disposed in series with the main cam path, the cam follower including an axially movable pin, resilient means constantly urging one end of the pin toward the cam path of the cam so as to be controlled thereby, and a controlled selectively operated arresting mechanism coacting with the other end of the pin to retain the pin in the position into which it has been thrust by the auxiliary cam path of the cam.

4,385,650

FEED ROLL WITH SPIKES

Phillip A. Schmidt, Federal Way, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

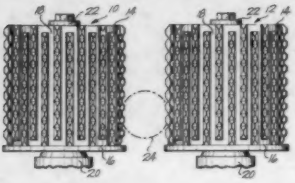
Filed Apr. 10, 1981, Ser. No. 252,970
Int. Cl.³ B27B *31/00*
U.S. Cl. 144—246 C **4 Claims**

1. A feedroll of the type comprised of a rotatable cylinder having a surface and the improvement comprising:

a plurality of trapezoidal pyramids extending upwardly from the surface and being substantially uniformly spaced thereover, and

each of the pyramids having a height falling within a range

of from 25 mm–40 mm, a base to height ratio falling within a range of from 1.1–1.5, a top to height ratio falling within



a range of from 0.25–0.55, and an angle of the inclined front and rear faces falling within a range of from 15°–30°.

4,385,651

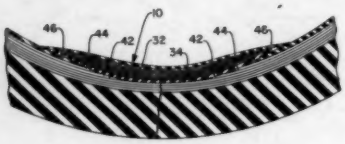
TIRE REPAIR PATCH

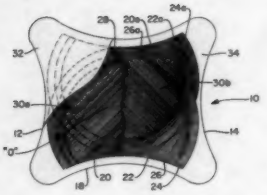
Jack V. Arquilla, 907 W. 4th St., Roanoke Rapids, N.C. 27870

Filed Aug. 17, 1981, Ser. No. 293,451

Int. Cl.³ B60C *21/02*

U.S. Cl. 152—367 **9 Claims**





1. A tire patch comprising a plurality of superimposed reinforcing plies of various sizes forming a center patch assembly from pairs plies having a pair of opposed edges of concave contour, and

said plies are made of a rubberized fabric, and each pair of said plies comprises two roughly half-moon shaped fabric pieces positioned in superimposed but reverse relation, and

said pairs of said plies being in a gradually increasing size from top to bottom of said patch assembly, and

each said ply having two base corners extending out from overlapped center portions of the pair of plies, and

a top and bottom cover layer each having two pairs of opposed concave contour edges, said cover layers being larger than said center patch assembly, one pair of contoured edges of said cover layers being substantially concentric with said concave edges of said center patch assembly.

4,385,652

ENDLESS TRACK CONSTRUCTION

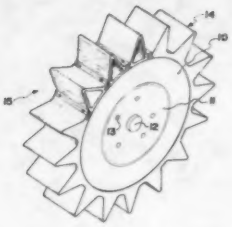
Ronald M. Frank, Box 6, Group 13, S.S. #1, Winnipeg, Manitoba, Canada (R3C 2E8)

Filed Oct. 20, 1980, Ser. No. 199,051

Int. Cl.³ B60C *27/08*

U.S. Cl. 152—187 **14 Claims**

1. A substantially cylindrical, endless track assembly engageable around an inflatable tire for use on wheel supported structures such as snowblowers, vehicles and the like; comprising in combination a plurality of sections substantially rigidly connected together to form a rim or track surrounding the associated tire, each section including a substantially rectangular base curved to conform substantially with the curvature of the perimeter of the associated tire, traction means extending from the outer side of said base and means to connect said sections



together in a substantially rigid relationship with one another, said traction means including a cleat extending from said base substantially perpendicular thereto and situated intermediate the ends thereof, said cleat including a pair of flanges extending from the outer surface of said base in spaced apart relationship and converging towards a common apex, the outer surfaces of said flanges being concave from the base thereof towards said common apex.

4,385,653

PNEUMATIC TIRE HAVING A TREAD CONSTRUCTED OF AT LEAST TWO KINDS OF RUBBERS

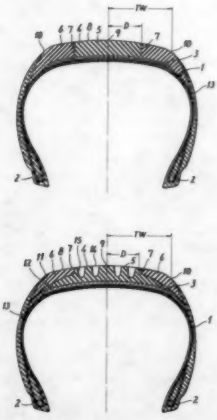
Takuya Okazaki, Toyonaka; Toyohiko Asada, Nishinomiya; Masahide Nishihata, Takatsuki; Yukitoshi Morishita, Toyonaka, and Keijiro Oda, Kawanishi, all of Japan, assignors to Toyo Rubber Industry Co., Ltd., Osaka, Japan

Filed Dec. 1, 1980, Ser. No. 211,497

Claims priority, application Japan, Dec. 31, 1979, 54-171484

Int. Cl.³ B60C *1/00, 11/00, 11/06*

U.S. Cl. 152—209 R **7 Claims**



1. A pneumatic radial-ply tire having a tread portion constructed of at least two kinds of rubber, said tire comprising carcass plies fastened to a pair of bead cores at both edges thereof and belt plies and a tread portion disposed in the area outside the carcass, in which said tread portion is constructed so that a tread center zone is composed of a rubber having a

low hysteresis loss factor (tan δ), as measured on a dynamic viscoelastomer under the conditions of 60° C. and 11 Hz, of not more than 0.15 and tread size zones extending on both sides of the tread center zone which are each composed of a rubber having a high hystersis loss factor (tan δ) of more than 0.15 as measured on a dynamic viscoelastometer under the conditions of 60° C. and 11 Hz; the tread center zone and the tread side zones are, in their interfaces, defined vertically in parallel to one another in the circumferential direction; and the interfaces on the tread surface are each located so that the distance between them is within the range of 0.5 to 0.8 times the overall tread width.

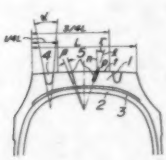
3. A pneumatic radial-ply tire having a tread portion constructed of at least two kinds of rubber, said tire comprising carcass plies fastened to a pair of bead cores at both edges thereof and belt plies and a tread portion disposed in the area outside the carcass, in which said tread portion is constructed so that a tread center zone is composed of a rubber having a low hysteresis loss factor (tan δ), as measured on a dynamic viscoelastometer under the conditions of 60° C. and 11 Hz, of not more than 0.15 and tread side zones extending on both sides of the tread center zone which are each composed of a rubber having a high hysteresis loss factor (tan δ) of more than 0.15 measured on a dynamic viscoelastometer under the conditions of 60° C. and 11 Hz; the tread center zone is laterally prolonged and extends through the interfaces between the tread center zone and the tread side zones and beneath the tread side zones in a gradually diminished thickness and each of the tread side zones is superposed on the laterally prolonged portion of the tread center zone; and the interfacial positions on the tread surface are each located so that the distance between them is within the range of 0.5 to 0.8 times the overall tread width.

4,385,654

TWO MAIN GROOVE-RIB TYPE TREAD PATTERN

Yasushi Sumikawa, Hoya; Hisao Seitoh, Higashiyamato, and Masahiro Kuroda, Higashimurayama, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Jan. 22, 1982, Ser. No. 341,729
Claims priority, application Japan, Feb. 3, 1981, 56/13744
Int. Cl.³ B60C *11/06*
U.S. Cl. 152—209 R **2 Claims**



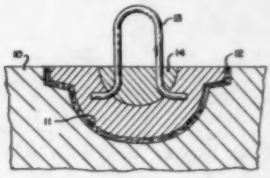
1. A tread pattern comprising; a two main groove-rib type provided with auxiliary grooves, said pair of said main grooves each having a depth of not less than 10 mm and disposed near both side edges of the tire tread along these edges at an inclination angle of about 0°, one to two pairs of said auxiliary grooves each having a depth of not less than 10 mm and a width narrower than that of said main grooves oppositely arranged between said main grooves at the inside thereof; the bottom of each said auxiliary groove directed to the center of the tire in such a manner that the center line in radial section of said auxiliary groove is inclined at an angle of 5°–20° with respect to a normal line of said tread drawn from an intersection of said center line and said tread, and a pair of said auxiliary grooves oppositely arranged in a region ranging from ¼L to ¾L with respect to the one side edge of said tread when the width of said tread is L, said main groove having a width corresponding to not less than 5% of the width of said tread and an opening angle of not less than 17° and; said each of said auxiliary grooves has a width corresponding to not more than 3.5% of the width of said tread and an opening angle of not more than 14°.

4,385,655

METHOD AND APPARATUS FOR PRODUCING INGOT MOLD CAPS

Norman F. Tisdale, Jr., Valencia, Pa. 16059

Continuation-in-part of Ser. No. 154,102, May 28, 1980, Pat. No. 4,342,357. This application Jul. 13, 1982, Ser. No. 397,794
The portion of the term of this patent subsequent to Aug. 3, 1999, has been disclaimed.
Int. Cl.³ B22D *19/00*
U.S. Cl. 164—112 **8 Claims**



5. A method for producing ingot mold caps comprising the steps of:

(a) forming a chill element having a cavity defined therein corresponding in shape to an ingot mold cap;

(b) placing a pre-formed pad of refractory/ceramic fiber felt insulation comprising about 45% to 60% SiO_2, about 40% to 55% Al_2O_3 and the balance impurities in ordinary amounts in said cavity as a fitted lining;

(c) placing a core having a lift engaging means centrally of said pad and spaced therefrom to form a metal receiving area between said core and pad, said left engaging means having portions extending out of the core into the metal receiving area;

(d) casting molten iron in the area between said pad and core;

(e) solidifying said iron; and

(f) removing said solidified iron as completed ingot mold cap from said pad.

4,385,656

METHOD OF MANUFACTURING FOUNDRY SAND MOLDS

Hideo Takahashi; Keishiro Igi; Hisashi Ogawara, and Haruo Nakayasu, all of Kurashiki, Japan, assignors to Kuraray Company, Ltd., Okayama, Japan

Division of Ser. No. 105,534, Dec. 20, 1979, Pat. No. 4,330,459. This application Jul. 24, 1981, Ser. No. 286,658
Claims priority, application Japan, Dec. 20, 1978, 53-158272; Dec. 20, 1978, 53-158273; Dec. 29, 1978, 53-161913; Jan. 23, 1979, 54-6719; Aug. 6, 1979, 54-100514
Int. Cl.³ B22C *1/20*
U.S. Cl. 164—525 **3 Claims**

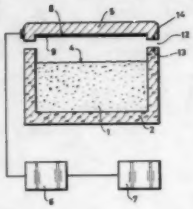
1. A method of manufacturing sand molds which comprises mixing (a) 0.0015–0.2 parts by weight of a polycarboxylic acid having 2–20 carbon atoms and containing at least two carboxyl groups per molecule or a hydroxyl carboxylic acid having 2–20 carbon atoms and containing at least one carboxyl group and one hydroxyl group, (b) 0.001–0.05 parts by weight of a magnesium oxide having a size of 220 to 320 angstroms in the [200] direction of the crystal thereof as measured by X-ray diffractometry and (c) one part by weight of a foundry molding sand in the presence of (e) 0.005–0.05 parts by weight of water followed by shaping and curing said shaped mixture.

4,385,657

PROCESS FOR AND APPARATUS FOR RECOVERING ENERGY

Carel W. J. Hooykaas, Rotterdam, Netherlands, assignor to Pelt & Hooykaas B.V., Rotterdam, Netherlands

Filed Mar. 6, 1980, Ser. No. 127,581
Int. Cl.³ F28D 21/00
U.S. Cl. 165—1 16 Claims



1. A process for recovering energy from a molten slag-like substance comprising the steps of:

(a) positioning a radiation energy collector at an effective distance for collecting energy from the substance;

(b) passing the substance by the collector;

(c) placing a corrosion resistant layer comprised of a metal taken from the 6th group of the Periodic Table and having a thickness of between 0.01 mm and 1 mm between the collector and the substance to protect the collector; and

(d) reflecting a portion of the energy from the layer back onto the molten substance to maintain the flow properties thereof; and

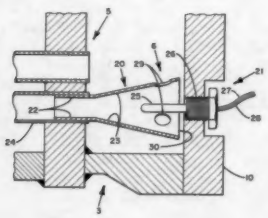
(e) recovering a portion of the energy from the substance by the energy collector.

4,385,658

FLUID TEMPERATURE MEASURING DEVICE

Gary S. Leonard, Minoa, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed May 26, 1981, Ser. No. 266,851
Int. Cl.³ F28F 21/00
U.S. Cl. 165—11R; 5 Claims



1. A device for measuring the temperature of a fluid flowing through one of several heat exchange conduits which empty into a collection chamber comprising:

temperature sensing means for generating electrical signals corresponding to the temperature of the fluid in contact with the temperature sensing means in the collection chamber; and

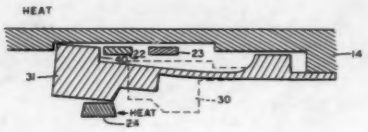
diverter means for directing the fluid from the one conduit whose fluid temperature it is desired to measure into the collection chamber to contact said temperature sensing means substantially only with fluid from this one conduit.

4,385,659

HEATING AND COOLING THERMOSTAT SET POINTS LIMITS SET BY CHANGEOVER LEVER

Thomas A. Bergquist, Albuquerque, N. Mex., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 6, 1981, Ser. No. 241,166
Int. Cl.³ F23N 5/20; H01H 37/12
U.S. Cl. 165—12 8 Claims



1. A time controlled thermostat comprising:

clock means having a selectively programmed output for time periods,

space temperature responsive switch means,

changeover switch apparatus connected to said temperature responsive switch means and adapted to connect said switch means to control either heating apparatus or cooling apparatus,

first and second temperature selection means,

means connecting said first and second temperature selection means and said clock means to said temperature responsive means for selecting a normal temperature and a different temperature to be maintained in the space at different time periods,

first limit means associated with said first temperature selection means,

means connecting said changeover switch apparatus to engage said first limit means to move said limit means to limit the range of said normal temperature by said first temperature selection means when said changeover switch apparatus is in a first predetermined position,

second limit means associated with said second temperature selection means, and

means connecting said changeover switch apparatus to engage said second limit means to move said second limit means to limit the range of said normal temperature by said second temperature selection means when said changeover switch apparatus is in a second predetermined position,

said changeover switch apparatus selectively switches said temperature responsive switch means whereby in said first predetermined position said temperature responsive switch means is adapted to control heating apparatus and in said second predetermined position said temperature responsive switch means is adapted to control cooling apparatus.

4,385,660

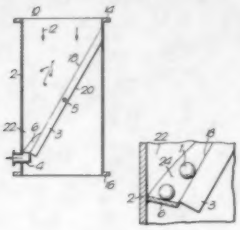
DEVICE FOR DIVERTING CLEANING BODIES

Josef Koller, Ziegeleiweg 26, 4006 Erkrath 2, Fed. Rep. of Germany

Filed Jun. 9, 1980, Ser. No. 157,592
Claims priority, application Fed. Rep. of Germany, Jun. 11, 1979, 2923659
Int. Cl.³ F28G 9/00
U.S. Cl. 165—95 20 Claims

1. In a device receptive discrete cleaning bodies carried in a fluid flowing through a tubular heat exchanger for diverting the bodies from the main stream of the fluid of the type having a diverter casing through which an axial current flows, a separating sieve system disposed therein having at least one sieve surface disposed at an angle to the flow and terminating at the downstream end in an outlet connection lateral to the wall of said casing, the at least one sieve surface being pivotable for cleaning purposes from a position facing upstream to a position

facing downstream, the improvement wherein the at least one sieve surface terminates in the vicinity of the diverter casing wall when pivoted into the upstream facing position with the sieve at a generally acute angle with respect to the casing wall, and further comprising means forming a transition surface



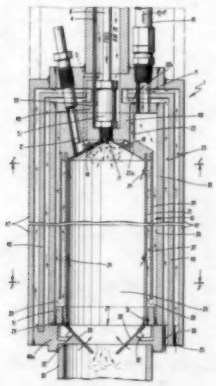
between said at least one sieve surface and the casing wall when pivoted into the upstream facing position which diverges from the generally acute angle such that the radius of curvature or angle between the transition surface and the casing wall prevents the cleaning bodies from becoming wedged between the sieves surface and the casing wall.

4,385,661

DOWNHOLE STEAM GENERATOR WITH IMPROVED PREHEATING, COMBUSTION AND PROTECTION FEATURES

Ronald L. Fox, Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 7, 1981, Ser. No. 222,855
Int. Cl.³ E21B *43/24*; F23D *13/08, 13/42*; F23N *5/00*
U.S. Cl. 166—59 **13 Claims**



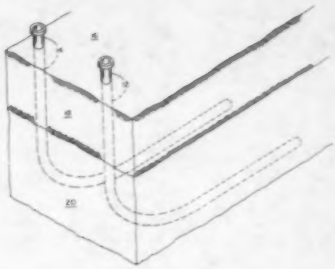
1. An apparatus for generating steam in a borehole comprising a combustor assembly which comprises a combustion chamber, top cap header means attached to an upper end thereof and steam and hot gas outlet means at the lower end thereof; oxidant inlet means, fuel inlet means and igniter means in communication with said combustion chamber through said top cap header means for generating hot combustion gas; water inlet means in communication with said combustion chamber to provide steam upon contact with said hot gas; and a hot gas feedback conduit extending from the combustion chamber to a preheat location in said top cap header means in the proximity of said fuel inlet means for preheating the fuel.

4,385,662

METHOD OF CYCLIC SOLVENT FLOODING TO RECOVER VISCOUS OILS

Lynn D. Mullins, DeSoto, and John L. Fitch, Dallas, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 5, 1981, Ser. No. 308,754
Int. Cl.³ E21B *43/22*
U.S. Cl. 166—263 **18 Claims**



1. A method of recovering viscous oil from a subterranean viscous oil-containing formation having no significant vertical permeability barrier therein comprising the steps of:

(a) providing at least one injection well extending downwardly from the earth's surface to the bottom of said oil-containing formation wherein the lower portion of the well extends through the formation at a downward angle not greater than 20° relative to a horizontal plane;

(b) providing at least one production well extending downwardly from the earth's surface to the bottom of said oil-containing formation wherein the lower portion of the well extends through the formation at a downward angle not greater than 20° relative to a horizontal plane;

(c) said production well being spaced from said injection well but the lower portion of said production well being generally at the same level as, and being generally parallel to, the lower portion of said injection well;

(d) said injection well and said production well being in fluid communication with the lower portion of said formation;

(e) injecting a hydrocarbon solvent into the formation via said injection well, said solvent having a specific gravity less than the specific gravity of the oil contained in the formation and a viscosity not greater than 1/100 the viscosity of the oil contained in the formation under formation conditions and recovering fluids including oil and solvent from the formation via the production well until the fluid being recovered comprises an unfavorable amount of solvent;

(f) shutting-in said wells to permit said formation to undergo a soak period for a predetermined period of time;

(g) thereafter injecting a hydrocarbon solvent into the formation via said production well, said solvent having a specific gravity less than the specific gravity of the oil contained in the formation and a viscosity not greater than 1/100 the viscosity of the oil contained in the formation under formation conditions and recovering fluids including oil and solvent from the formation via the injection well until the fluid being recovered comprises an unfavorable amount of solvent;

(h) shutting-in said wells to permit said formation to undergo a soak period for a predetermined period of time; and

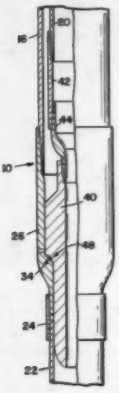
(i) thereafter injecting a driving fluid into the formation via said injection well and recovering fluids including oil from said formation via said production well until the fluid being recovered from the production well comprises an unfavorable amount of driving fluid.

4,385,663

PACKERLESS WELL COMPLETION ASSEMBLY

Stanley O. Hutchison, Bakersfield, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Aug. 3, 1981, Ser. No. 289,548
Int. Cl.[3] E21B 33/10, 41/00, 43/24
U.S. Cl. 166—378 7 Claims



1. A deep subsurface injection or producing well completion assembly adapted for use with a well having casing cemented to the subsurface formations at or near the injection or production interval of said well comprising:

(a) a hollow cross-over adaptor attached to said casing and cemented with said casing to said subsurface formations,

(b) a formed sealing surface on the internal surface of said hollow cross-over adaptor,

(c) and means including tubing within said casing having a sealing face at its subsurface end cooperating with said sealing surface of said cross-over adaptor to effect a completion of said subsurface well at said cross-over adaptor within said subsurface formation.

7. A method for effecting a subsurface well completion from the well head of a well to a deep subsurface injection or production zone comprising:

(a) placing a cross-over adaptor within said well at said deep subsurface location, said cross-over adaptor being between first and second casing elements, said cross-over adaptor and said casing elements being cemented to said subsurface,

said cross-over adaptor being hollow and having a sealing surface along its inner surface,

(b) placing a sealing adaptor into said cross-over adaptor on the lower end of a tubing string within said first casing,

said sealing adaptor being hollow and having a sealing face along its outer surface, said sealing face having mating dimensions with respect to said sealing surface on said cross-over adaptor, said sealing face and said sealing surface being designed to establish a substantially fluid tight seal at said cross-over adaptor by press fit engagement therebetween,

said tubing string being supported from said well head,

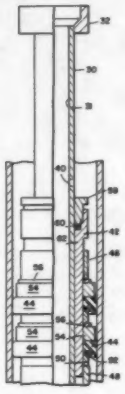
(c) and pressing said sealing face of said sealing adaptor against said sealing surface of said cross-over adaptor under the weight of said tubing string from said well head to effect said well completion at said cross-over adaptor.

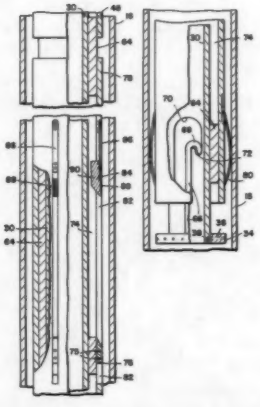
4,385,664

FRANGIBLE CUP THERMAL PACKER ASSEMBLY FOR CASED WELLS

Stanley O. Hutchison, Bakersfield, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Aug. 3, 1981, Ser. No. 289,549
Int. Cl.[3] E21B 33/126, 33/129
U.S. Cl. 166—382 13 Claims





1. A frangible cup thermal packer assembly for a cased well, comprising:

(a) a hollow inner mandrel having means at its upper end for connection to a well tubing within said cased well and a removably mounted ring at its lower end;

(b) an outside mandrel surrounding said inner mandrel and establishing an annulus between said inner and outer mandrel along at least a portion of said inner mandrel;

(c) a middle mandrel surrounding said inner mandrel and slideably operable within said annulus between said inner and outer mandrels;

(d) means on said ring on said inner mandrel for connecting and disconnecting said middle mandrel to said inner mandrel;

(e) a packer cup mandrel surrounding said inner mandrel and coupled to said middle mandrel and movable therewith;

(f) thermal packer cup means mounted on the exterior surface of said packer cup mandrel, said thermal cup packer means cooperating with said cased well to seal the annulus

within said cased well and between said frangible cup thermal packer and said well;

(g) slip means spring mounted to said outside mandrel in position to be engaged with said cased well;

(h) a wedge surface means mounted on said middle mandrel in alignment with said slip means and cooperable therewith to position said slip means in engagement with said cased well;

(i) said inner mandrel being movable relative to said middle mandrel when said means on said ring is disconnected from said outer mandrel, whereby said wedge surface means is moved to position said slip means in engagement with said cased well;

(j) and said packer cup mandrel being movable along said inner mandrel in response to fluid pressure down said inner mandrel and outside said outside mandrel to carry said middle mandrel and said wedge surface means against said slip means;

(k) a circulation port through said inner mandrel adjacent to a portion of said packer cup mandrel;

(l) and internal packing means fixed to said packer cup mandrel and operating between the outside of said inner mandrel and the inside of said packer cup mandrel, said internal packing means closing said circulation port when said inner mandrel is moved with respect to said packer cup mandrel and said middle mandrel.

12. A method placing a frangible cup thermal packer assembly at depth in a cased well, said assembly including:

a hollow inner mandrel,

an outside mandrel,

a middle mandrel connected to a packer cup mandrel including an external packer cup and an internal packing means,

a means on said inner mandrel for connecting and disconnecting said middle mandrel from said inner mandrel,

slip means on said outside mandrel,

a wedge surface means on said middle mandrel,

and a circulation port through said inner mandrel in alignment to be positioned in cooperation with said internal packing means on said packer cup mandrel,

the steps of:

(a) connecting said assembly to the end of a well conductor string with said means on said inner mandrel connecting said middle mandrel to said inner mandrel;

(b) running said assembly into a cased well to the depth desired, circulating well fluids through said inner mandrel and out said circulation port;

(c) releasing said connection between said middle mandrel and said inner mandrel;

(d) moving said inner mandrel with respect to said middle mandrel and said packer cup mandrel to close said circulation port with said internal packing means;

(e) pressurizing said well by circulating fluid down said inner mandrel to force said packer cup mandrel upward along said inner mandrel; and

(f) moving said wedge surface means with said middle mandrel to move said wedge surface means against said slip means to engage said slip means with said cased well.

4,385,665

KINETIC ENERGY ABSORBER

Fritz Knoll, Konradigasse 21 D-7550 Constance, Fed. Rep. of Germany

Filed Oct. 23, 1980, Ser. No. 199,814

Claims priority, application Switzerland, Oct. 23, 1979, 9509/79

Int. Cl.³ B25D *17/24*

U.S. Cl. 173—162 R **15 Claims**

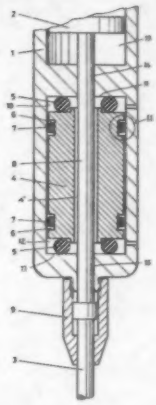
1. A device for absorbing kinetic energy derived from an element oscillating in a direction parallel to a longitudinal axis of the device, comprising:

(a) a housing coupled to said element and defining a chamber bounded by opposite inner end walls and an inner lateral wall of said housing; said inner end walls being generally transverse to and said inner lateral wall being generally parallel with said axis;

(b) an oscillation quencher body situated in said chamber spaced from said inner walls; said body having opposite end faces oriented towards respective said inner end walls and a lateral face oriented towards said inner lateral wall;

(c) a resiliently deformable impact member situated between each said end face of said body and a respective said inner end wall of said housing; each impact member being structured such that an exponential relationship exists between a deformation of the impact member and a resilient counterforce generated thereby by the deformation;

(d) means defining at least one groove having a base spaced from said inner lateral wall of said housing at a predetermined distance; said base having a width generally parallel with said axis; and



(e) a compressible solid rolling body received in said groove and having a cross-sectional diameter; said rolling body circumferentially engaging said base of said groove and said inner lateral wall of said housing; further wherein said predetermined distance is less than said cross-sectional diameter, whereby said rolling body is in a cross-sectionally compressed state; and further wherein said width of said base is greater than the dimension of the cross section of the compressed rolling body measured parallel to said axis, whereby a relative axial displacement between said housing and said quencher body effects a rolling displacement of said rolling body within and relative to said groove parallel to said axis.

4,385,666

METHOD OF MAINTAINING PRESET PARAMETERS OF DRILLING MUD

Ulmas D. Mamadzhanov, 700000 Ts-1, dom 19, kv. 25; Vitold M. Bakhir, proezd Gaidara, 7-A, kv. 17, and Stanislav A. Alekhin, Chilanzar, kvartal 24, 53, kv. 89, all of Tashkent, U.S.S.R.

PCT No. PCT/SU79/00088, § 371 Date Nov. 27, 1980, § 102(e) Date Nov. 3, 1980, PCT Pub. No. WO80/02038, PCT Pub. Date Oct. 2, 1980

PCT Filed Sep. 28, 1979, Ser. No. 212,701

Claims priority, application U.S.S.R., Mar. 27, 1979, 2736507

Int. Cl.³ E21B *21/06*

U.S. Cl. 175—40 **3 Claims**

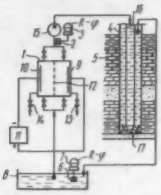
1. A method of maintaining the preset parameters of a drilling mud during drilling of a well comprising:

continuously measuring the redox potential of said mud at the inlet and outlet of said well;

comparing the measurements thus obtained; and registering any variation between said redox potential at said inlet and

at said outlet and where a variation in the content of oxidation products is noted at said outlet;

subjecting said mud to a unipolar electric treatment at said inlet and increasing the content of reduction products in said mud and where a variation in the content of reduction products is observed at said well outlet;



subjecting said mud to a unipolar electric treatment at said inlet and increasing the content of oxidation products in said mud until the preset value of said redox potential of said mud is restored at said well outlet.

4,385,667

CABLE REAMING APPARATUS

James M. Reichman, Issaquah; Thomas A. O'Hanlon, Tacoma, both of Wash., and Thomas J. Kendrew, Redwood City, Calif., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Oct. 14, 1980, Ser. No. 196,847
Int. Cl.³ E21C *23/00*
U.S. Cl. 175—53 **8 Claims**

1. An apparatus for cutting the soil around and along the length of an existing underground cable for replacing the latter, said apparatus comprising: a main body; means for interconnecting said main body to said cable such that said body is slidably movable along the length of said cable from one end of the latter to its other end; means for slidably moving said main body along said cable; and means at least in part carried by said main body for cutting through the soil surrounding said cable as said body moves along the latter, said cutting means including means for applying a high pressure stream of fluid in front of said main body in a forward direction at least substantially parallel with the movement of said main body as the latter moves along said cable whereby to cut through the soil around said cable in front of said main body.

4,385,668

INNER PIPE SUPPORT ARRANGEMENT FOR DOUBLE-WALLED DRILL PIPE

Floyd W. Becker, and Kare Asak, both of Calgary, Canada, assignors to Turbo Resources Ltd., Calgary, Canada

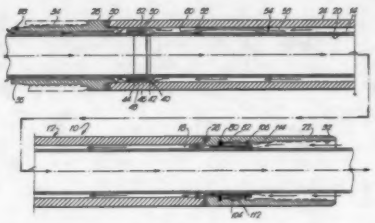
Filed Feb. 25, 1981, Ser. No. 237,934
Int. Cl.³ E21B *17/18*
U.S. Cl. 175—135 **10 Claims**

1. A pipe section for a percussion type drill string having a plurality of pipe sections secured end-to-end, said section comprising:

an outer pipe member;

an inner pipe member adapted to be concentrically disposed within said outer pipe member and define with said outer pipe member an annular fluid passage, said inner pipe member having a bore defining a return fluid flow passage; and

suspension means in said annular passage for suspending said inner pipe member on said outer pipe member in an at rest position and permitting limited axial movement of said inner pipe member relative to said outer pipe member



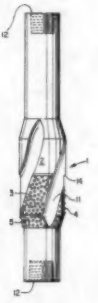
when a blow is applied to said outer pipe sectin so as to minimize stresses applied to said inner pipe member, said suspension means including an annular seat on the inner surface of said outer pipe member abuttingly engageable with an annular surface concentric with said inner pipe member on a sleeve secured to the outer surface of said inner pipe member, defining said at rest position.

4,385,669

INTEGRAL BLADE CYLINDRICAL GAUGE STABILIZER REAMER

Paul Knutsen, 18 Varshaven Pl., NW., Calgary, Alberta, Canada (T3P 0E1)

Filed Oct. 6, 1981, Ser. No. 309,048
Int. Cl.³ E21B *10/44, 10/56, 17/22*
U.S. Cl. 175—323 **12 Claims**



1. A stabilizer-reamer for use in association with drill stem and a drill bit in drilling a hole in a rock formation comprising in combination:

(a) means for stabilizing the drill stem and drill bit against excessive lateral movement within the hole;

(b) means for reaming the wall of the hole when it is of a diameter less than the diameter of the drill bit; and

(c) means for grinding to smaller size pieces of rock encountered in drilling the hole in the formation and wherein the stabilizer-reamer is of a generally cylindrical shape, of a given diameter, the stabilizer means (a) comprising a portion of the shape including a portion of the curved surface of the shape with the given diameter, the reamer means (b) comprising another portion of the shape including a portion of the curved surface, the diameter of the curved surface of the reamer means (b) being sized of slightly smaller diameter than the diameter of the curved surface of the stabilizer means (a) and the hole being

drilled, the curved surface of the reamer means (b) having thereon at least one hardened member which protrudes from the curved surface of means (a) and means (b).

4,385,670

METHOD FOR FILLING PACKAGING CONTAINERS BY WEIGHT

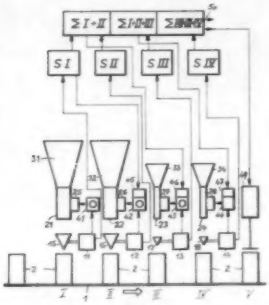
Kurt Braun, Hegnach; Gerhard Laupp; Rolf Leich, both of Stuttgart; Walter Saur, Ditzingen; Horst Scheifele, Stuttgart, and Jürgen Schick, Ludwigsburg, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 25, 1980, Ser. No. 124,046

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1979, 2951665

Int. Cl.³ G01G *13/02*

U.S. Cl. 177—1 **4 Claims**



1. A method for filling packaging containers with a quantity of pourable goods, measured out by weight, comprising the steps of:

sequentially measuring out of a plurality of first partial quantities belonging to one package unit one after another;

weighing, one after another, of the measured out first partial quantities belonging to one package unit;

storing and summing up the weight values of the first partial quantities belonging to one package unit in a computer;

sequentially filling of the first partial quantities belonging to one package unit into a container after being weighed;

comparing the summed-up weight values of the weighed partial quantities belonging to one package unit with a set-point value; and

measuring out at least one other partial quantity equal to the ascertained missing weight value and the filling thereof into the container.

4,385,671

COMBINATION WEIGHING SYSTEM

Takashi Hirano, Kobe, Japan, assignor to Yamato Scale Company, Ltd., Hyogo, Japan

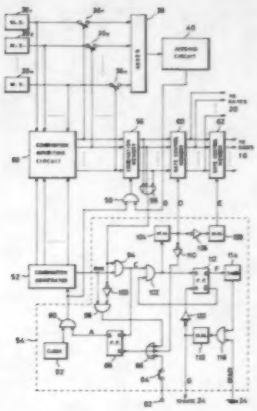
Filed Jun. 1, 1981, Ser. No. 268,696

Claims priority, application Japan, May 30, 1980, 55-73525

Int. Cl.³ G01G *13/00*

U.S. Cl. 177—25 **3 Claims**

1. A combination weighing system comprising a plurality of weighing units each having a weighing cradle for carrying articles to be weighed and a weight sensor for sensing the weight of said articles to produce a weight indicating signal; an adder circuit having a plurality of input terminals for summing incoming signals at the input terminals to produce a sum signal; a plurality of normally-open switches coupled respectively between said weight sensors and the input terminals of said adder circuit and provided each with a control terminal; a judging circuit for comparing said sum signal with a predetermined range of weight to produce an acceptance signal when said sum is within said range; a switch control circuit having a plurality of output terminals coupled respectively to the control terminals of said normally-open switches for selecting said output terminals successively in accordance with a predetermined set of combinations and producing output signals therefrom to close corresponding ones of said normally-open switches; a combination memory having a plurality of input terminals coupled respectively to the output terminals of said switch control circuit for storing a combination of inputs in



response to said acceptance signal and supplying same to utilization means; and inhibiting means coupled between said switch control circuit and said normally-open switches for inhibiting supply of the output signals of said switch control circuit to specific ones of said normally-open switches at least while the weight indicating signals from the weight sensors coupled to said specific normally-open switches are unstable due to loading and/or unloading of the corresponding weighing cradles of said weighing units.

4,385,672

FEED LEVEL INDICATOR

Donald D. Schepel, 2503 Lakepoint La., Clearwater, Fla. 33520

Filed Mar. 2, 1982, Ser. No. 353,904

Int. Cl.³ G01G *5/02*; G01F *23/20*

U.S. Cl. 177—207 **10 Claims**

1. An assembly that determines the weight of fungible goods disposed interiorly of an opague container, comprising,

a plurality of shoe means,

a frame means for maintaining said shoe means in circumferentially spaced relation to one another,

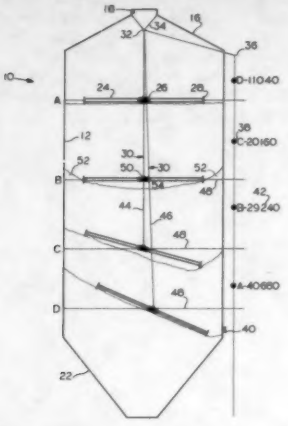
an elevating means for raising and lowering said frame means and hence said shoe means out of and into contacting relation, respectively, with said fungible goods,

said elevating means having a portion thereof disposed exteriorly of said container, in visible relation to an observer stationed adjacent said container,

a vertically disposed graduation means disposed on a preselected exterior surface of said container,

an indicator means fixedly secured to and movable conjointly with said exterior portion of said elevating means, said indicator means and said graduation means coopera-

tively positioned so that said observer may make an analog-type reading of the contents, by weight, of said goods



when said shoe means are collectively resting atop said goods.

4,385,673

SPHERICAL JOINT WITH FLEXIBLE SEALS

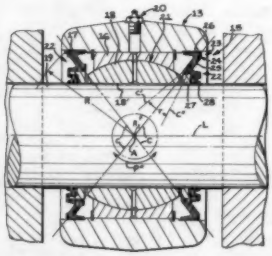
Arthur E. Olt, Jr., Pekin, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/01255, § 371 Date Sep. 26, 1980, § 102(e) Date Sep. 26, 1980, PCT Pub. No. WO82/01227, PCT Pub. Date Apr. 15, 1982

PCT Filed Sep. 26, 1980, Ser. No. 250,756

Int. Cl.³ B62D *55/00*

U.S. Cl. 180—9.5 **12 Claims**



1. In a track-type vehicle (10) having a pair of laterally spaced track roller frames (12), an equalizer bar (13), and a spherical joint (15) including a pin (19) connecting each end of said equalizer bar (13) to a respective one of said track roller frames (12), said spherical joint (15) further including a semi-spherical bearing (16) mounted in said equalizer bar (13), a journal (18) mounted in said bearing (16) at mating semi-spherical surfaces (21) thereof, said pin having said journal (18) mounted thereon and disposed on a longitudinal axis (L) thereof for first pivotal movement (P') relative to said equalizer bar (13) about said axis (L) and second pivotal movement (P'') relative to said equalizer bar (13) transverse to said first pivotal movement (P'), and an annular seal assembly (22) mounted between said equalizer bar (13) and pin (19) on each side of said journal (18), the improvement comprising:

each said seal assembly (22) including means (23) for permitting flexing of said seal assembly (22) to at least substantially prevent stretching or compression thereof in response to said relative second pivotal movement (P'') between said equalizer bar (13) and said pin 19.

4,385,674

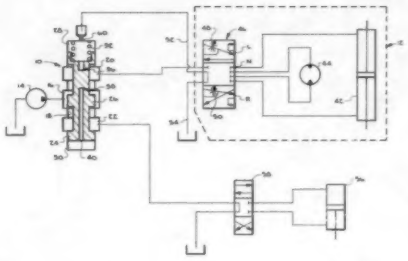
LOAD SENSING POWER STEERING SYSTEM

Glen T. Presley, 403 W. Stocker, Angola, Ind. 46703

Filed Dec. 17, 1980, Ser. No. 217,399

Int. Cl.³ B62D *5/08*

U.S. Cl. 180—132 **10 Claims**



1. In a fluid control system for selectively actuating a conventional power steering unit while supplying secondary motors all from a single pressure source; a conventional power steering unit, including a three-position turning valve means with at least one variable orifice, said valve supplying in a series path a steering motor through a fluid meter, and means coupling the meter to the turning valve to impart a follow-up movement to the turning valve in accordance with manual movement of the meter; the improvement comprising a priority flow valve positioned between the pressure source and the control valve of the steering unit, the priority valve including:

an inlet chamber connected to the pressure source;

a priority outlet chamber connected to the steering unit;

a secondary outlet chamber connected to said secondary motor;

valve spool means positioned by a pair of oppositely-acting control servos, the first servo urging the spool toward a position blocking inlet flow to the secondary outlet while opening inlet flow to the steering unit; and the second servo urging the spool toward a position opening inlet flow to the secondary outlet and blocking inlet flow to the steering unit;

spring means urging said spool means in the same direction as the first servo;

a first sensing passage in the valve connecting the pressure source with the first servo;

a first orifice in the first sensing passage;

a second sensing passage connecting the pressure source with the second servo;

a third sensing passage connecting the first servo to the flow path downstream of the variable orifice in the turning valve, whereby a pilot flow is provided from the pressure source across the first servo under all positions of the steering control valve; and

a second orifice in the third sensing passage whereby the combined pressure drops across the first and second orifices is the same as the drop across the variable orifice in the turning valve.

4,385,675

SPEED CONTROL ACTUATOR

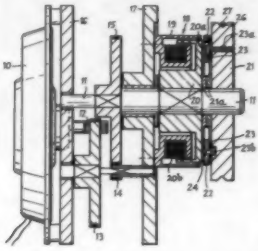
Timothy J. Blee, Rugby, England, assignor to Associated Engineering Limited, Warwickshire, England

Filed Sep. 25, 1980, Ser. No. 191,032

Claims priority, application United Kingdom, Sep. 28, 1979, 7933755

Int. Cl.³ B60K *31/00*

U.S. Cl. 180—178 11 Claims



1. Vehicle speed control apparatus, wherein the vehicle is driven by a prime mover having a power control member, said apparatus including an actuator comprising a reversible electric motor adapted to receive a speed correction signal generated by a speed control system, the speed correction signal being related at least to the sign of the value of the difference between an actual speed and a predetermined desired vehicle speed, a first clutch member driven by said motor, a second clutch member normally permanently connected by a double-acting connection to said power control member of the prime mover whereby, at any instant, the position of said second clutch member will correspond to the position of said power control member, and means operative on engagement of the speed control to apply the speed correction signal to drive the electric motor and to load said first and second clutch members into driving engagement at the position of the clutch member corresponding to the instantaneous position of the power control member to drive the second clutch member and double-acting connection and the power control member until the vehicle speed reaches the predetermined desired speed.

4,385,676

FUEL FEED SYSTEM FOR CARBURETORS ON MOTORCYCLES

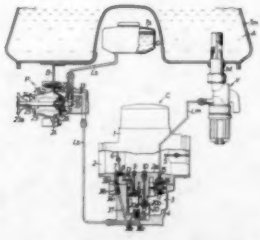
Shigekazu Yoshimura, Asaka, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 14, 1981, Ser. No. 254,163

Claims priority, application Japan, Apr. 22, 1980, 55-53986[U]

Int. Cl.³ B60K *5/02;* F02B *1/00*

U.S. Cl. 180—219 3 Claims



1. A fuel feed system for carburetors on motorcycles, comprising a frame on which an engine having a carburetor is mounted; a main fuel tank provided at a front side of an upper portion of said frame for storing alcoholic fuel to be used as a main fuel; an auxiliary fuel tank provided at a rear side of the upper portion of said frame for storing gasoline to be used as a starting fuel; a main fuel passage for connection between said main fuel tank and said carburetor, an auxiliary fuel passage for connection between said auxiliary fuel tank and said carburetor; a switch cock disposed in said main fuel passage and adapted to be manually operated to control supply of alcoholic fuel to said carburetor; and a measuring pump disposed in said auxiliary fuel passage and adapted to be manually operated to meter and supply a proper amount of gasoline from said auxiliary fuel tank to said carburetor at the time of engine starting, said switch cock and said measuring pump being disposed on opposite sides of a lower surface of said main fuel tank, said pump comprising a pump body, a diaphragm of an elastic material dividing the interior of said pump body into a pump chamber communicating with said auxiliary fuel passage, and an atmospheric pressure chamber communicating with the atmosphere, and a return spring resiliently biasing said diaphragm toward said pump chamber.

4,385,677

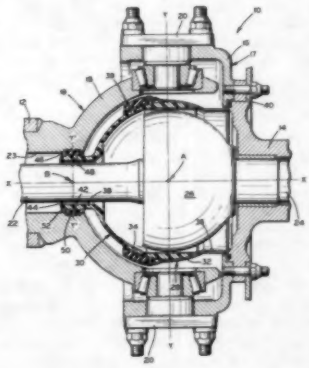
UNIVERSAL JOINT HOUSING

Eugene E. Sowers, Toledo, Ohio, assignor to Dana Corporation, Toledo, Ohio

Filed Mar. 9, 1981, Ser. No. 241,966

Int. Cl.³ F16D *3/10;* F16J *15/16*

U.S. Cl. 180—254 6 Claims



1. In a steering drive axle having an axle housing assembly, a wheel spindle assembly, trunnion means mounting said wheel spindle assembly for turning movement on said axle housing assembly, a drive shaft extending through said axle housing assembly, a driven shaft extending through said wheel spindle assembly, and a universal joint connecting said drive and driven shafts; the improvement comprising:

a housing for enclosing said universal joint, said housing comprising coacting first and second cover members, said first cover member having an inner portion surrounding said universal joint and an outer end connected to said wheel spindle assembly, said second cover member having an inner portion and an outer end, said inner portion surrounding said universal joint and slidably engaging said first cover inner portion, and

means resiliently connecting said second cover outer end to said axle housing assembly, said resilient connection comprises an annular member interposed between said second cover outer end and said axle housing assembly permitting said second cover member to move relative to said first cover member during turning of said wheel spindle assem-

bly on said cover assembly while floating about said flexible connection.

4,385,678

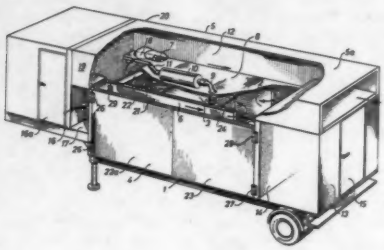
SILENT-RUNNING INTERNAL COMBUSTION MOTOR POWER UNIT

Jerzy H. Cederbaum, Sorterargatan 14-16, 162 26 Vällingby, Sweden

Continuation of Ser. No. 22,566, Feb. 23, 1979, abandoned. This application Aug. 19, 1980, Ser. No. 253,340

Int. Cl.³ F01N *1/10*

U.S. Cl. 181—204 **1 Claim**



1. A sound absorption chamber device for a silent-running motor power unit, comprising a casing having at least one inlet and one outlet for cooling air and/or air of combustion for a motor unit, said casing containing labyrinthine air passages formed by side, top and bottom walls lined with acoustic absorption material, at least one side wall comprising an inner side wall and outer side wall, said inner side wall being situated inside said, outer side wall, each of said inner and outer side walls limiting a part of an air passage and having at least one portion in the form of a panel or door which is horizontally movable in relation to said portion of the other one of the inner and outer side walls and other moving portions of the casing so as to form side wall portions which are horizontally movable inside one another, said inner and outer side wall portions being displaceable without obstructing one another and being operable to expose an opening from the space outside the power unit through the side walls into the motor unit to make it accessible for servicing, said inner and outer side wall portions being pivotable about a joint at a side edge thereof, said inner side wall portion having vertical pivoting axis being displaced from a vertical pivoting axis of said outer side wall portion in a direction perpendicular to said axes, such that the inner side wall portion is unobstructed when displaced, and a fan being arranged to create an airflow through the inlet passage, a motor power compartment, a radiator of the motor power unit and the outlet passage, respectively, wherein an air intake of the motor unit is arranged in said airflow upstream of said radiator.

4,385,679

DESCENT CONTROL DEVICE

Timothy E. Mulcahy, 8900 Lori La., Orland Park, Ill. 60462

Filed Feb. 17, 1981, Ser. No. 234,885

Int. Cl.³ A62B *1/14*

U.S. Cl. 182—5 **6 Claims**

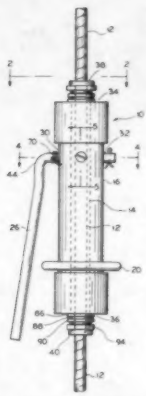
1. A descent control device comprising:

(a) a rope with a first end attached at an elevated position from which a person or plurality of persons desire to descend, and a second end located at a lower point to which said person desires to descend;

(b) a housing substantially cylindrical in shape;

(c) a guide means mounted axially within said housing and providing an open channel between the two ends of said housing, and having said rope passing through said open channel thereby slidably attaching said housing to said rope;

(d) a crank with a first bend which divides said crank into a first part and a second part, said first part rotatably mounted substantially parallel to a diameter of said housing by passing through opposing holes but in said housing, said first part having a second bend which provides an offset in said first part such that said offset passes through an arc as said crank is rotated, said second part exterior to said housing thereby providing a handle by which said crank may be rotated, and said offset in said first part of said crank having two positions, a first position where said



offset slidably contacts said rope thereby pressing said rope against said guide means and thereby producing friction between said rope and said crank and guide means, said friction resisting the descent of said housing along said rope, and a second position wherein said offset does not press against said rope thereby releasing said housing to descend along said rope;

(e) attachment means whereby said person may be attached to said housing thereby providing said person with means to safely descend said rope by his rotating said crank to produce friction between said rope and said guide means and said crank, thereby controlling his descent along said rope.

4,385,680

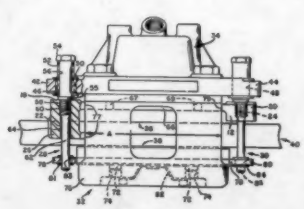
PIN SLIDER DISC BRAKE

Robert T. DuCharme, and Robert E. Herzog, both of South Bend, Ind., assignors to The Bendix Corporation, Southfield, Mich.

Continuation of Ser. No. 78,854, Sep. 26, 1979, Pat. No. 4,274,514, which is a continuation of Ser. No. 937,679, Aug. 28, 1978, abandoned. This application Aug. 25, 1980, Ser. No. 181,302

Int. Cl.³ F16D *55/224*

U.S. Cl. 188—72.4 **1 Claim**



1. In a disc brake assembly having a torque member fixedly disposed on one side of a disc, a caliper extending over the

outer periphery of the disc and cooperating with a pair of friction elements to bias the latter into engagement with the disc during a brake application, at least one pin cooperating with the torque member and the caliper to movably support the caliper relative to the torque member, and a sleeve carried by the one pin to define a sliding surface for slidably supporting the caliper, the improvement wherein said sleeve remains spaced from said torque member when said one pin is cooperating with said torque member whereby said sleeve is carried independently of said torque member in spaced relation thereto, the torque member including a flange extending axially over the periphery of the disc, said flange including a bore for receiving the one pin, said flange defining an abutment surface slidably engageable with said caliper to absorb braking torque, said bore extending through said flange adjacent said abutment surface and said bore including a first portion threadably engaging the one pin and a second adjoining portion defining a clearance with the one pin substantially over the disc, said caliper carrying a resilient bushing forming an opening to slidably receive said thermoplastic sleeve, the one pin threadably engaging the torque member and including a recess to carry and retain said thermoplastic sleeve independently of the torque member.

4,385,681

DRUM BRAKES HAVING AUTOMATIC ADJUSTERS

Willibrod Conrad, Ochtendung, and Karl-Heinz Jungmann, Neuwied, both of Fed. Rep. of Germany, assignors to Lucas Industries Limited, Birmingham, England

Filed May 19, 1980, Ser. No. 151,299

Claims priority, application United Kingdom, May 21, 1979, 7917530

Int. Cl.³ F16D *65/56*

U.S. Cl. 188—79.5 B **6 Claims**

1. A brake comprising: at least one friction lining; a friction surface which is engaged by the friction lining upon brake actuation; an adjuster for adjusting the running clearance between said friction lining and said friction surface; a pawl and ratchet mechanism for operating said adjuster; means for moving said pawl relative to said ratchet in response to movement of said friction lining relative to said friction surface; and a bimetallic strip operative when the temperature of the brake is above a predetermined value to disengage the pawl from the ratchet during an initial portion only of the movement in an adjusting direction of the pawl relative to the ratchet, whereby when the temperature of said brake is above said predetermined value the amount of movement of said friction lining relative to said friction surface necessary to operate said adjuster is greater than the amount of movement necessary when the temperature of said brake is below said predetermined value, said friction lining being secured to a brake shoe and said pawl being formed on a lever pivotally connected to the brake shoe, the bimetallic strip being secured to the lever.

4,385,682

MOTOR VEHICLE CLUTCH FACING AND FRICTION PROPERTY MODIFIER THEREFOR

Yasunobu Yamamoto, Chiryu; Toshiaki Sakabe, Toyota, and Eiji Hamada, Hanada, all of Japan, assignors to Aisin Seiki Company, Limited and Aisin Kako Kabushiki Kaisha, both of Kariya, Japan

Filed Oct. 27, 1980, Ser. No. 201,368

Claims priority, application Japan, Oct. 26, 1979, 54-139013

Int. Cl.³ F16D *69/02*

U.S. Cl. 192—107 M **20 Claims**

1. A cashew-graphite friction dust consisting essentially of a cashew nutshell resin having graphite powder integrally incorporated therein, wherein said cashew nutshell resin is in the form of a powder.

11. A clutch facing comprising as asbestos fiber cord, the cashew-graphite friction dust of claim 1, and a binder.

4,385,683

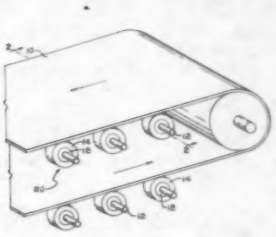
SLEEVE FOR ATTACHMENT OF A CERAMIC DISK TO CYLINDRICAL SHAFT

Carroll P. Krupp, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Continuation of Ser. No. 85,846, Oct. 18, 1979, abandoned. This application Jun. 18, 1981, Ser. No. 274,845

Int. Cl.³ B65G *39/04*

U.S. Cl. 193—37 **1 Claim**



1. A cylindrical conveyor belt roller assembly comprising an elongated cylindrical shaft having supportable shaft ends, a tubular disk of ceramic material,

and a tubular sleeve having an inner cylindrical surface concentrically supported by friction upon the outer surface of said shaft, said sleeve also having an exterior surface concentrically supporting, by friction, the inner surface(s) of said disk, said sleeve being formed of a rigid, deformable, non-elastic, high modulus plastic material being selected from the group consisting of rigid PVC, high density, ultra high molecular weight polyethylene, polypropylene and ABS, and having a void content, of from about 25% to about 50%, sufficient to permit the mounting of said disk upon said sleeve and said sleeve upon said shaft without adversely stressing said sleeve while in tension due to its compression between said shaft and disk.

4,385,684

COIN SELECTION DEVICE

Osamu Sugimoto, Sakado, and Masayoshi Takizawa, Kitamoto, both of Japan, assignors to Kabushiki Kaisha Nippon Coinco, Tokyo, Japan

Filed Jul. 10, 1980, Ser. No. 167,549

Claims priority, application Japan, Jul. 17, 1979, 54-98188[U]; Jul. 17, 1979, 54-98189[U]

Int. Cl.³ G07D *5/08*

U.S. Cl. 194—100 A **5 Claims**

1. A coin selection device comprising:

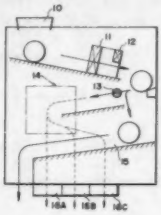
a signal oscillating coil and a signal receiving coil disposed on both sides of a coin path, respectively;

an amplifier circuit for detecting and amplifying an output of said signal receiving coil;

a comparator circuit for comparing an output of said amplifier circuit with a reference voltage to provide a detection signal representative of whether or not a coin is false;

a first memory circuit for storing the peak value in level of an output of said signal receiving coil provided when a coin passes through said coin path;

a second memory circuit for storing an output voltage of said amplifier circuit provided when said device is in standby mode;



a voltage division circuit for subjecting said output voltage stored in said second memory circuit to voltage division to apply a resultant voltage division output as said reference voltage to said comparison circuit;

wherein said second memory circuit includes at least a capacitor and a resistor whose time constant is relatively large, said second memory circuit being adapted to store the steady level of the output voltage of said amplifier circuit; and

further comprising a reset circuit for resetting said first memory circuit whenever a coin passes through said coin path and after said coin has passed through said coin path.

4,385,685

CONTROL AND MONITORING ARRANGEMENT FOR DRIVES OF MOVING MACHINE PARTS

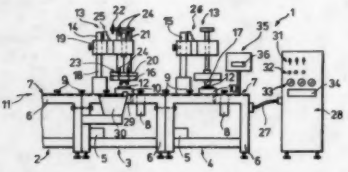
Walter Sticht, Wankhamerstrasse 8/48 Attnang-Puchheim, Austria A-4800

Filed Feb. 2, 1981, Ser. No. 230,379

Claims priority, application Austria, Apr. 11, 1980, 1970/80

Int. Cl.³ B65G *43/08*

U.S. Cl. 198—341 **33 Claims**



1. A control and monitoring arrangement for drives of moving parts of a machine for the manufacture of structural parts in two or more steps, which comprises a control connected to each one of the drives, each control being comprised of a switching module for actuating the drive, a control module cooperating with the switching module for controlling actuation of the drive, a releasable coupling detachably connecting the control module to the switching module for ready replacement of the control module in the control, and a monitoring module connected to, and cooperating with, the control module and further comprising a source of energy, conduit means for delivering the energy from the source to each drive, a central control unit detachably and replaceably connected to the controls, and the switching and control modules of the controls having substantially like connections for the releasable connection to the control means and to the central conduit unit.

4,385,686

FEEDING DEVICE

Berth U. Gustafsson, Österskär, Sweden, assignor to Projectus Industriprodukter AB, Bromma, Sweden

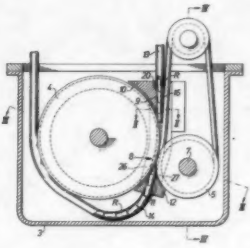
PCT No. PCT/SE80/00027, § 371 Date Oct. 6, 1980, § 102(e) Date Oct. 6, 1980, PCT Pub. No. WO80/01679, PCT Pub. Date Aug. 21, 1980

PCT Filed Jan. 30, 1980, Ser. No. 197,091

Claims priority, application Sweden, Feb. 8, 1979, 7901119

Int. Cl.³ B65G *47/22*

U.S. Cl. 198—434 **36 Claims**



1. A feeding device for feeding a stream of rotationally symmetrical objects, comprising:

first rotatable wheel means for feeding a stream of rotationally symmetrical objects, said first wheel means having a guiding groove on the circumferential surface thereof adapted to receive and contact said objects;

second rotatable wheel means for driving a belt means, said second wheel means cooperating with said first wheel means in a common plane to form a nip at said common plane between said first and second wheel means, respectively;

inlet means for supplying said objects to said nip;

stationary exit guide means having stationary surfaces for maintaining and guiding said stream of objects away from said nip;

outlet means for discharging said objects away from said guide means; and

belt means arranged on said second wheel means for feeding said objects through said nip from said inlet means to said outlet means, said belt means comprising first and second belt portions arranged on each side of said common plane to resiliently and obliquely contact and frictionally engage said objects in cooperation with said guiding groove of said first wheel means.

4,385,687

DISPLAY CARTON AND METHOD

Dan Dutcher, Woodbury, Minn., assignor to Champion International Corporation, Stamford, Conn.

Filed Oct. 9, 1981, Ser. No. 309,924

Int. Cl.³ B65D *5/50*

U.S. Cl. 206—45.14 **12 Claims**

1. A shadow display carton which cushions and restrains the packaged article away from the carton bottom and provides a substantially full front display of the article framed by a slanted side shadow panel and a lower vertical panel comprising:

a vertical rectangular back panel;

side panels hingedly attached along vertical edges of said back panel;

top and bottom end flaps hingedly attached to said rectangular back panel, one at the horizontal top edge thereof and one at the horizontal bottom edge thereof;

said bottom end flap having a bottom cushioning means hingedly attached thereto along a horizontal fold line;
said side panels having closure flaps hingedly attached at opposite ends thereof and side flaps hingedly attached

along side edges opposite the vertical edges attached to said back panel;
one of said side flaps having a slanted shadow panel means hingedly attached thereto.

4,385,688

ARTICLE DISPLAY AND HOLDER APPARATUS

Robert F. Grant, 3234 South Cuyler Ave., Berwyn, Ill. 60402

Filed Apr. 6, 1981, Ser. No. 251,154
Int. Cl.³ B65D *85/58*
U.S. Cl. 206—0.83 **13 Claims**

1. A display and storage device for an article, comprising: a flat container of a transparent material, said container being generally rectangular in shape and having upper and lower members joined together along three edges thereof and said container having an open end defined by fourth edges of said upper and lower members, permitting an article to be received and contained within said container, and a receptacle having upper and lower panels each having a recessed center portion, the recessed portions of said panels being aligned with one another defining a compartment for receiving said container with an article contained therewithin, opposing peripheral edges of the recessed portions of the panels having cutaway portions which define a channel for receiving the edges of said container, and the walls of at least the cutaway portion of the channel which receives the fourth edges of said container being tapered defining said container closing means which cooperates with the fourth edges of said upper and lower members of said container, to urge said fourth edges of said upper and lower members together when the container is located within the compartment of said sleeve member, thereby closing the open end of said container.

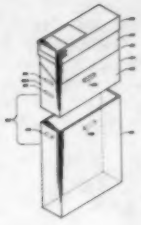
4,385,689

LIGHTER APPARATUS FOR USE WITH CIGARETTE PACKAGES OR CASES THEREFOR

Romualdo Olazabal, Box 2926, Bayamon, P.R. 00619

Continuation of Ser. No. 2,810, Jan. 11, 1979, Pat. No. 4,281,761. This application Jan. 14, 1981, Ser. No. 225,107
The portion of the term of this patent subsequent to Aug. 4, 1998, has been disclaimed.
Int. Cl.³ A24F *15/10*; B65D *85/10*
U.S. Cl. 206—87 **5 Claims**

1. Apparatus for removably affixing a mechanical lighter device to a conventional flip-top cigarette package having a flip-top cover portion, comprising:
a mechanical lighter device
means for supporting said mechanical lighter device to which said mechanical lighter device is attached; and
wherein said mechanical lighter device supporting means to which said mechanical lighter device is attached includes means for removably affixing the same over the flip-top cover portion of a conventional flip-top cigarette package with the mechanical lighter device on the exterior of said flip-top cover portion with no modification of the cover-portion or other package component or to the interior space available for cigarettes within the package being



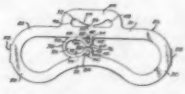
required upon such affixation and such that the flip-top cover portion can be opened and closed to provide access to the interior space within the package while said lighter device supporting means remains continuously affixed thereto and such that by a mechanical lighter device supported by said supporting means, a cigarette can be lit.

4,385,690

PACKAGE UNIT CARRIER

Robert C. Olsen, Streamwood, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Nov. 25, 1981, Ser. No. 324,723
Int. Cl.³ B65D *85/62, 75/56, 71/02*
U.S. Cl. 206—150 **8 Claims**



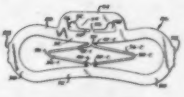
1. A package unit comprising a plurality of cylindrical containers arranged in rows and columns, and a package unit carrier comprising a first resilient strip circumscribing all of said containers in surface contact with at least certain of said containers, and a single piece intermediate resilient strip integral with said first strip and extending between spaced portions thereof, said intermediate strip extending between predetermined adjacent containers in surface engagement therewith, each of said containers being engaged by at least one of said strip to provide a stable package.

4,385,691

PACKAGE UNIT CARRIER

Mindaugas J. Klygis, Barrington, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Nov. 25, 1981, Ser. No. 324,724
Int. Cl.³ B65D *85/62, 75/56, 71/02*
U.S. Cl. 206—150 **27 Claims**



1. A package unit comprising a plurality of cylindrical containers arranged in rows and columns, and a package unit

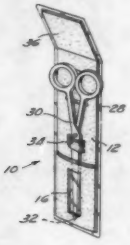
carrier comprising a first resilient strip circumscribing all of said containers in surface contact therewith, and an intermediate resilient strip integral with said first strip and extending between spaced portions thereof, said intermediate strip extending between predetermined adjacent containers in surface engagement therewith, each of said containers being engaged by at least one of said strips to provide a stable package.

4,385,692

SURGICAL INSTRUMENT TIP PROTECTOR AND METHOD OF MANUFACTURE

John D. Eldridge, Jr., Balboa Island, Calif., assignor to Instranetics, Inc., Tustin, Calif.

Filed May 15, 1981, Ser. No. 264,115
Int. Cl.³ B65D *81/02;* **A61B** *17/06*
U.S. Cl. 206—363 **6 Claims**



1. A sterilizable protector for a surgical instrument comprising:

a base member being formed of heat sterilizable fine-pore foam upon which said instrument rests; and

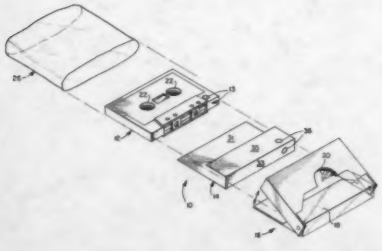
an integral cover overlying a portion of said base member and having a periphery, a portion of which is bonded to said member and a top portion of which is unbonded to form an open-ended pocket for said instrument tip, said cover having a cushioned portion being formed of heat sterilizable fine-pore foam and a puncture resistant transparent window portion to permit identification of said instrument, said window portion being formed of pressed and heated heat sterilizable fine-pore foam.

4,385,693

ORIGIN IDENTITY INSERT FOR PACKAGED CASSETTES

Anthony L. Gelardi, Box 127, and Paul J. Gelardi, P.O. Box 127, both of, Cape Porpoise, Me. 04014

Filed Feb. 27, 1981, Ser. No. 238,830
Int. Cl.³ B65D *85/67, 25/54, 75/54*
U.S. Cl. 206—387 **9 Claims**



1. An identification permitting device for cassette packages comprising;

a pre-recorded tape cassette cartridge having at least one identifying marking provided thereon for indicating a particular supplier or manufacturer;

a container for holding said cassette cartridge with at least a portion thereof being transparent so that said identifying marking can be seen therethrough when the tape cassette cartridge is mounted therewithin;

insert means for normally covering a substantial portion of the cassette cartridge; and

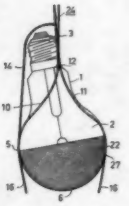
said insert means provided with further means for permitting viewing of said at least one identifying marking when the insert is in place substantially around and covering the tape cassette cartridge.

4,385,694

PACKAGED ELECTRIC LAMP

Franciscus M. Klomp, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 4, 1981, Ser. No. 259,800
Claims priority, application Netherlands, Jun. 2, 1980, 8003196
Int. Cl.³ B65D *85/42*
U.S. Cl. 206—418 **3 Claims**



1. An electric lamp package, which comprises a lamp envelope having a neck adjoining at one end a convex portion and connected at the other end to a lamp cap; an elongate packaging strip extending at one end from beyond the lamp cap and bent around the convex portion of the lamp envelope and extending at its other end back beyond the lamp cap to form two oppositely disposed long sides, said two extending ends engaging each other substantially flatly; a pair of lengthwise incisions in one long side to provide a packaging strip central portion in contact with the abutting convex portion of the lamp envelope and two packaging strip edge portions extending along said central portion and being in opposite lateral edge-wise contact with the lamp envelope, the central portion extending from the bottom of the lamp cap to an area on the lamp envelope convex portion between the lamp envelope neck and the greatest cross section of said convex portion, said lamp being arranged asymmetrically with respect to said two edge portions with the lamp cap positioned between said central portion and said flatly engaged extending ends; a lengthwise extending opening formed in the other long side to provide a window for displaying part of the lamp, with two packaging strip edge portions adjoining said opening, at least part of the boundary of said opening being in contact with the lamp envelope to keep the lamp fixed in place; and means to secure together the corresponding edge portions of the two oppositely disposed long sides.

4,385,695

PACKAGING BLOCK FOR CYLINDRICAL ARTICLES

Bruce E. Champlin, 3125 Smart Rd., Sault Ste. Marie, Mich. 49783, and David M. Manthey, 34221 39th Ave., Auburn, Wash. 98002

Filed Jul. 1, 1981, Ser. No. 279,428
Int. Cl.³ B65D *85/20, 6/00, 21/02*
U.S. Cl. 206—443 **5 Claims**

1. In a packaging system for storing and transporting cylindrical articles, the improvement comprising a plurality of packaging blocks adapted to be secured around each cylindrical article at spaced intervals along the length thereof, each packaging block comprising:

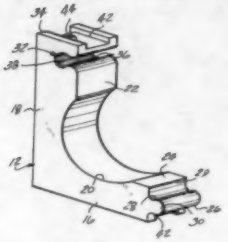
first and second members each formed of a resilient material, each of the first and second members having first and second perpendicularly disposed legs and a semi-circular concavity formed in the interior contiguous surfaces of the first and second legs;

a boss formed at one end of the first leg of each of the first and second members and extending outward therefrom, the boss having a narrow first end portion and an enlarged outer end portion;

a groove formed in the end of the second leg of each of the first and second members and extending substantially parallel to the boss, the groove having an enlarged interior portion complementary to the outer end portion of the boss and a narrow end portion having side walls which yieldingly receive the boss of the other of the first and second members when the first and second members are disposed in an opposed, inverted manner around the cylindrical article to releasably interconnect the first and second members around the cylindrical article;

bores formed in the first and second legs of each of the first and second members; and

pin means adapted to be removably and slidingly inserted into aligned bores of adjacent disposed packaging blocks to align the adjacent pairs in a stacked arrangement.



4,385,696

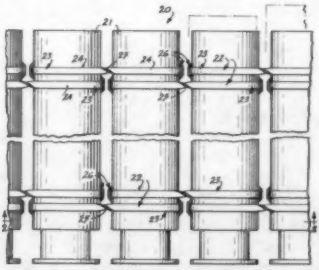
LINKED CONTAINER ARTICLE CARRIER

Charles E. Benedict; Kenneth G. Kimsey, Jr., both of Tallahassee, and Robert A. Freeman, Gainesville, all of Fla., assignors to Wayne H. Coloney Company, Inc., Tallahassee, Fla.

Filed Aug. 21, 1981, Ser. No. 294,946

Int. Cl.³ B65D *85/62, 85/20, 71/02*

U.S. Cl. 206—443 **7 Claims**



1. An article carrier comprising a plurality of elongated hollow containers, a plurality of belts connecting each container to at least one other container, each of said belts forming at least portions of a pair of loops the axes of which are spaced apart a distance greater than the diameter of said containers, one of said containers being received within each loop, and each of said belts being made of flexible substantially non-expandable continuous filament material encased within a flexible adhesive, whereby said containers may be disposed in abutting relationship with each other or may be spaced apart a selected distance up to a fixed predetermined distance apart.

4,385,697

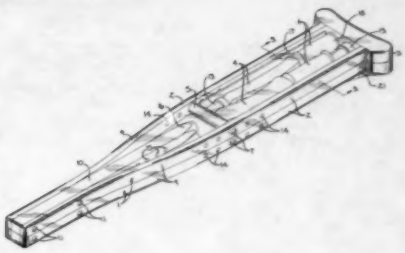
SHIPPING PACKAGE FOR CRUTCHES

Ted F. Urban, and Michael J. Willeford, both of Oshkosh, Wis., assignors to Lamico, Inc., Oshkosh, Wis.

Filed Feb. 24, 1982, Ser. No. 351,854

Int. Cl.³ B65D *65/02, 71/08;* **A61H** *3/02*

U.S. Cl. 206—497 **8 Claims**



1. A shipping package for crutches, comprising a pair of crutches disposed in face-to-face alignment, each crutch having a pair of side members and having an arm piece connecting the upper ends of the side members and having a hand grip connecting the central portions of the side members, the side members, arm piece and hand grip of each crutch defining an opening, said openings being disposed in alignment, a container disposed within said aligned openings and extending longitudinally between said arm pieces and said hand grips and extending laterally between said side members, a plurality of rubber-like accessories disposed within the container, and a heat shrunk plastic covering enclosing said crutches and said accessories.

4,385,698

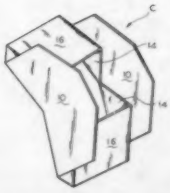
CORNER PROTECTING DEVICE

George J. Goguen, Reading, Mass., assignor to Container Corporation of America, Chicago, Ill.

Filed Apr. 8, 1982, Ser. No. 366,716

Int. Cl.³ B65D *81/02, 85/30*

U.S. Cl. 206—586 **5 Claims**



1. An automatically erectable, corner protecting device for use in providing a space between an outer corner of a packaged article and an inner corner of an outer shipping container or wrapper, said device being formed from a unitary blank of foldable sheet material such as paperboard and comprising:

(a) a pair of outer retaining panels disposed in spaced parallel relationship with each other and adapted for engagement with inner surfaces of container side walls;

(b) an inner section interposed between said outer retaining panels and being adapted for engagement with outer sur-

faces of a packaged article adjacent a corner portion thereof;

(c) said inner section including a pair of generally U-shaped pocket members spaced from each other, to define therebetween an opening for receiving a corner portion of a packaged article, each of said pocket members including:

(i) a pair of side panels foldably joined along first side edges to corresponding edges of respective outer retaining panels on parallel fold lines;

(ii) a center panel foldably joined at opposite side edges to second side edges of respective side panels on parallel fold lines.

4,385,699

METHOD AND APPARATUS FOR INSPECTING EMPTY CANS ENTIRELY AUTOMATICALLY

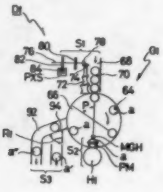
Masato Ashina, Yokosuka, Japan, assignor to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Sep. 26, 1980, Ser. No. 191,646

Claims priority, application Japan, May 28, 1980, 55-70066

Int. Cl.³ B07C 5/344

U.S. Cl. 209—538 12 Claims



1. A method for inspecting empty cans entirely automatically in a can manufacturing system, comprising a flange portion inspecting step in which an empty can is forcibly rotated while the flange portion thereof is checked for cracks and length employing non-destructive contactless testing with a static electromagnetic inspection and a light reflection inspection, and further comprising a print quality inspecting step in which the print quality on the outer peripheral surface of said can is checked for the drawing condition of a printed pattern by light reflection inspection, said static electromagnetic inspection and both of said light reflection inspections being carried out simultaneously, whereby defective cans are sorted out from good cans.

4,385,700

DIFFERENTIAL REFLECTIVITY METHOD AND APPARATUS FOR SORTING STRIP ITEMS

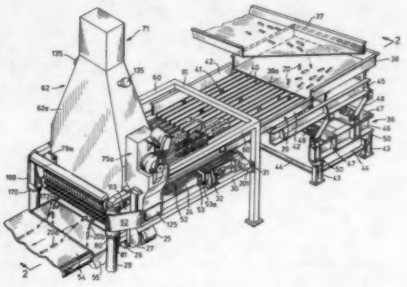
Joseph L. Hodges; Norman B. Wassmer, both of Ontario, Oreg., and Paul R. Myers, Caldwell, Id., assignors to Ore-Ida Foods, Inc., Boise, Id.

Continuation of Ser. No. 89,965, Oct. 31, 1979, abandoned. This application Apr. 15, 1981, Ser. No. 254,476

Int. Cl.³ B07C 5/00

U.S. Cl. 209—539 11 Claims

1. Apparatus for sorting slender elongate items, some of which are defective, comprising means defining a viewing area; means associated with said viewing area for sensing defects in such items and signalling when a defect is sensed, said sensing means including a plurality of paired sensing devices focused on the viewing area so as to view corresponding contiguous sub-areas of said viewing area; means defining a removal area; conveying means for passing the items through said viewing area and said removal area, including a conveyor adapted to receive the items randomly oriented in a flow of such items, said conveyor having upstanding walls defining a series of side by side channels extending longitudinally thereof along the direction of item travel for receiving said items and placing them in substantially singulated end to end alignment, and a second conveyor of endless belt type arranged as a longitudinal continuation of the first conveyor and having a series of troughs aligned longitudinally with said series of channels for receiving the singulated and aligned items from the channels of the first conveyor and for carrying the received items through said viewing area and into said removal area in substantially singulated end to end alignment, the width of each of the troughs of the belt conveyor comprehending a plurality of said sub-areas, and said paired devices being adapted to sense the two different wavelength bands, respectively, of energy reflected from the corresponding sub-areas; means for flooding the viewing area with radiant energy containing two mutually different wavelength bands in a substantially integrated spread throughout said viewing area; means for comparing the sensed radiant energy of one wavelength band with the sensed radiant energy of the other wavelength



band from each sub-area of said viewing area and for producing data signals, respectively, for those sub-areas as to which the predetermined relationship between the sensed energy of different wavelength bands exists; means associated with said removal area for removing those items identified as defective by signals from the sensing means, said removal means including a plurality of removal devices arranged in side-by-side relationship across the width of the removal area so as to comprehend respective troughs of the belt conveyor whose widths correspond to a plurality of said contiguous sub-areas of the viewing area; and operating means responsive to data signals, for independently operating the removal devices in accordance with a predetermined number of data signals produced for respective corresponding pluralities of contiguous sub-areas of the viewing area, so as to remove from the items carried by the belt conveyor those which have produced the predetermined number of data signals.

4,385,701

ARTICLE ELEVATING APPARATUS WITH INCLINED ROLLER CARRIERS

William F. Buckminster, Voorhees; William J. Covert, Berlin, and Wilson Y. Conyngham, Clayton, all of N.J., assignors to Garvey Corporation, Blue Anchor, N.J.

Filed May 15, 1981, Ser. No. 263,914

Int. Cl.³ B07C 5/34

U.S. Cl. 209—598 9 Claims

1. An article elevating apparatus comprising

a plurality of roller carrier sections,

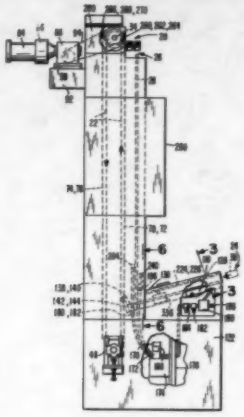
means for moving the plurality of roller carrier sections sequentially in an endless path including a vertical path portion,

said moving means including means for holding said roller carrier sections at an incline relative to the horizontal in said vertical path portion,

means at a one end of the vertical path portion for feeding articles sequentially to the roller carrier sections,

a guide rail extending vertically alongside the vertical path portion on the downward side of the roller sections for

maintaining the articles on the roller carrier sections while moving in the vertical path portion, and



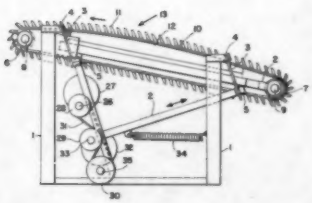
said guide rail having a termination point at the opposite end of the vertical path portion so as to define a gravity discharge station where articles carried by the roller carrier sections are discharged by passing the guide rail.

4,385,702

VIBRATING SEPARATOR

Don H. Lenker, and Dennis F. Nascimento, both of Salinas, Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Aug. 6, 1981, Ser. No. 290,542
Int. Cl.³ B07C *5/00*
U.S. Cl. 209—629 **4 Claims**



1. A vibrating separator to separate objects of different sizes and shapes, comprising:

(a) a frame;

(b) a second frame supported by said first frame;

(c) flexible support means attached to said first frame and supporting said second frame;

(d) a conveyor belt mounted on said second frame;

(e) upwardly projecting fingers attached to said belt and spaced at intervals to entrap objects of a particular size and shape and convey them in the direction of the movement of the belt and to support objects of a different size and shape on the surface of the fingers and convey them by vibration in a direction different from the movement of the belt to separate the entrapped and vibrated objects;

(f) means attached to said second frame for vibrating said belt and said fingers; and

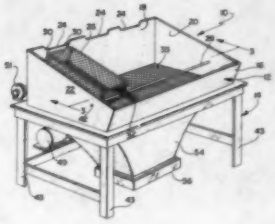
(g) means attached to said first frame for moving said conveyor belt.

4,385,703

FRY BASKET SHAKER DEVICE

Patrick J. Murphy, II, 245 Newhill Ave., Somerset, Mass. 02726

Filed Mar. 30, 1981, Ser. No. 249,240
Int. Cl.³ B07B *1/28*
U.S. Cl. 209—674 **9 Claims**



1. An apparatus for shaking pieces of breaded food to remove excess breading intermixed therewith and for sifting said breading to recover reusable portions thereof comprising:

a. a main shaker housing having peripheral side walls and a bottom wall, said bottom wall being defined by a screen through which said breading is sifted;

b. at least one fryer basket for containing pieces of breaded food therein, said basket being suitable for immersion in hot liquid fat for frying pieces of food contained therein and being removably mounted within said housing and formed with openings in the walls thereof to allow excess breading intermixed with said pieces of food to fall therethrough;

c. means for supporting said housing in a manner for allowing shaking movement of said housing relative to said supporting means;

d. means for shaking said housing and the fryer basket mounted therein, whereby the excess breading intermixed with said pieces falls through said openings in said basket so that said basket and the pieces contained therein can be removed from said housing and immersed in a fryer containing hot liquid fat to cook said pieces, and whereby the excess breading which falls through said openings in said basket is sifted by said bottom wall with the reusable portions thereof falling through said bottom wall; and

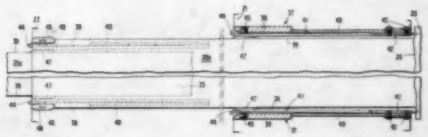
e. means for containing and recovering said reusable portions as they fall from said bottom wall.

4,385,704

CRANE BOOM TOP PLATE LATERAL SUPPORT

Stanley R. Spain, Waynesboro, Pa., and William G. Reichard, Columbia, S.C., assignors to Kidde, Inc., Clifton, N.J.

Filed Aug. 14, 1980, Ser. No. 178,372
Int. Cl.³ B66C *23/04*
U.S. Cl. 212—269 **10 Claims**



10. In a multi-section telescopic crane boom of the type in which the movable boom sections are either fully extended or fully retracted during use, the respective boom sections having bottom lateral wear pads between them and having top and side plates which are subject to buckling stresses as well as lateral deflection during use, the improvement comprising, longitudinally extending lateral supports, arranged in pairs on

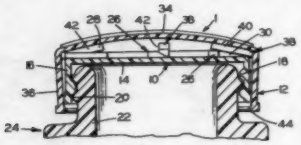
opposite sides of the boom sections near their forward ends, one end of each lateral support being fixed to a boom section, adjustment means being positioned at the free end of each lateral support, said supports being laterally angled relative to the top plate edges, a first and second pad fixed in longitudinally spaced relationship to a boom section top plate selective engagement with the interior side of the lateral support, the first pad engaging the lateral support when the boom is fully extended and the second pad engaging the lateral support when the boom is fully retracted.

4,385,705

SAFETY CLOSURE

Maximillian Kusz, Waterville, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Oct. 9, 1981, Ser. No. 310,177
Int. Cl.³ B65D *55/02, 85/56;* **A61J** *1/00*
U.S. Cl. 215—220 **4 Claims**



1. A child-resistant safety closure for a container having a threaded finish defining an annular opening comprising: an inner closure member including a top panel section, and an integral annular skirt depending from the periphery of said panel; and an outer closure member including a top panel and an integral annular skirt depending from the periphery of said panel of said outer closure member, means for retaining said inner closure member within said outer closure member in a nested configuration allowing free relative rotational movement therebetween and a limited axial movement of said inner closure member within said outer closure member; the top surface of the panel of said inner closure member and the inside surface of the panel of said outer closure member having complementary torque transmitting surfaces engagable for transmission of closure removal torque from the outer member to the inner member, surfaces formed on at least one of panels inclined to said panel surface and engagable with the torque transmitting surfaces of the other panel for normally preventing the torque transmitting engagement by causing the complementary surfaces to cam past each other, said panel of the outer closure member being resiliently deformable to permit at least portions of said torque transmitting surfaces of said outer closure member to engage the complementary surfaces of said inner closure member.

4,385,706

CHILD RESISTANT CONTAINER AND CLOSURE

Bruce A. Freeman, Oklahoma City, Okla., assignor to Carlisle Corporation, Oklahoma City, Okla.

Filed Jan. 4, 1982, Ser. No. 336,906
Int. Cl.³ B65D *55/02*
U.S. Cl. 215—225 **11 Claims**

1. A child resistant container and closure assembly comprising:

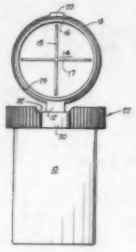
a container having an open-ended cylindrical neck portion;

retainer means around the neck portion for engaging a safety ring rotatably mounted on the neck portion to prevent axial movement of the safety ring on the neck portion;

a safety ring rotatably mounted on said neck portion and engaged with said retainer means, said safety ring having a tab exposure relief therein, and defining a tab safety recess circumferentially spaced from said tab exposure relief;

a lid adapted to cover and close the opening to said neck portion;

a hinge structure connecting the lid to said neck portion; and



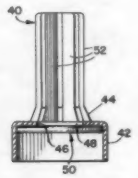
an access tab projecting from said lid on the opposite side thereof from said hinge, said access tab having a dimension and location such that when said lid is closed, said tab is protected by said safety ring from lifting with a finger except when said ring is rotated to a position to align said access tab with said tab exposure relief.

4,385,707

COMPOSITE TIP-OFF CONTAINER CAP

L. David Leiter, Willow Grove, Pa., assignor to The West Company, Phoenixville, Pa.

Filed Jun. 24, 1981, Ser. No. 276,974
Int. Cl.³ B65D *41/42*
U.S. Cl. 215—253 **8 Claims**



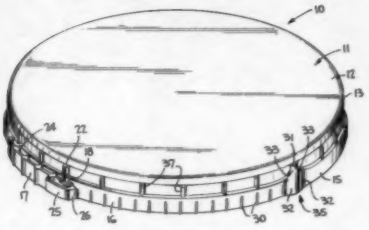
1. A composite tip-off type cap operatively adapted for connection to a container having an access opening for closure thereof and sealing contents therein, said composite cap comprising an elongated, narrow exterior top portion, and a bottom, open-ended skirt operatively integrated therewith, said skirt having a lower edge removably attachable to a said container about a said access opening, said composite cap being conjointly removable as an integrated unit from a container, to open the container for access to the liquid therein, by application of a lateral tilting force against the elongated cap exterior at a position thereof remote from connection of the cap to the container, said elongated exterior portion being plastic and having a bottom disc thereon, said skirt being separate from said plastic portion, said skirt including a top portion having an opening therethrough, said plastic exterior portion extending through said opening, said disc being integratedly attached to an interior surface of said skirt top portion to integrate the composite cap parts during assembly.

4,385,708

TAMPER PROOF LID

John J. Curry, 2 S. 752 Theresa Ct., Oak Brook, Ill. 60521

Continuation-in-part of Ser. No. 85,975, Oct. 18, 1979, Pat. No. 4,322,010. This application Jun. 9, 1981, Ser. No. 271,944
Int. Cl.³ B65D *41/46*
U.S. Cl. 215—256 23 Claims



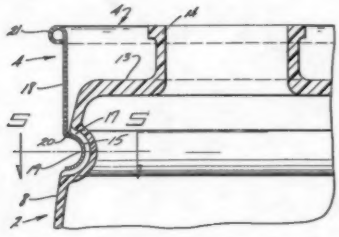
1. A tamper proof lid, said lid comprising a crown having a depending annular body with means for interlocking with a container neck finish, said annular body having depending therefrom a lower skirt incorporating a frangible portion, a handle secured to said frangible skirt portion and having a major part of its length extending in a generally circumferential direction coextensive with a radially adjacent portion of said skirt, said frangible skirt portion when separated from the remainder of said lid forming a lid removing pull strap.

4,385,709

PARROT-BEAKABLE FREESTANDING PLASTIC DRUM ASSEMBLAGE

Geoffrey C. Ames, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 636,272, Nov. 28, 1975, abandoned. This application Jan. 9, 1978, Ser. No. 867,633
Int. Cl.³ B65D *8/08, 1/48, 25/28*
U.S. Cl. 220—71 2 Claims



2. A container comprising body means having a longitudinal axis and forming a container for receiving material, said body means including an exterior handling means disposed substantially transverse to said longitudinal axis and having at least one surface adapted to be grasped by equipment to manipulate the body means, wherein

the exterior handler means includes a handler element having two annular perpendicular surfaces to be grasped by equipment to manipulate the body means, said surfaces being a bottom surface and upper side surface,

said upper side surface is disposed confronting said body means in spaced relation thereto,

said handler element comprises a ring lying in surrounding relationship to the body means,

the handler means is supported in support means formed on said body means in the form of an annular horizontal arcuate groove,

said handler means including a support member integral with said ring in the form of an arcuate radially inwardly extending annular projection snugly secured in said groove so as to support the body means at least in a direction substantially parallel to said longitudinal axis when equipment manipulates the body means,

said body member supporting the integral handler element in spaced relationship to the body means, and

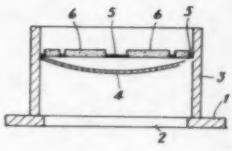
both of said two surfaces being spaced axially above said groove and said support member.

4,385,710

DEVICE FOR EMERGENTLY RELIEVING PRESSURE

Tomomichi Kurihara, Katano, and Nobuyoshi Mori, Osaka, both of Japan, assignors to Hitachi Shipbuilding & Engineering Company Limited, Osaka, Japan

Filed Jul. 1, 1981, Ser. No. 279,470
Int. Cl.³ B65D *25/00*; F16K *17/40*
U.S. Cl. 220—89 A 4 Claims



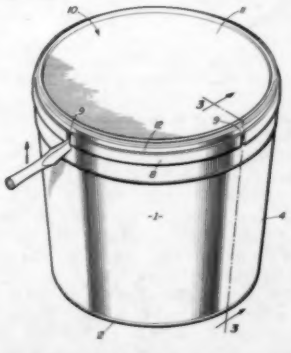
1. A device for emergently relieving pressure comprising a flexible plate having a convex downwardly facing surface and a concave upwardly facing surface and having its periphery attached to the inner surface of a hatch coaming, wherein the periphery of the plate is welded to the inner surface of the coaming at appropriate intervals, and the gaps between the remaining part of the periphery of the plate and the coaming inner surface is sealed by a sealant.

4,385,711

CHILD RESISTANT CLOSURE ASSEMBLY

James L. Bowen, Fort Ann; Amelio J. Cocci, Glens Falls, both of N.Y., assignor to Genpak Corporation, Glens Falls, N.Y.

Filed Jul. 24, 1981, Ser. No. 286,640
Int. Cl.³ B65D *17/52, 43/26*
U.S. Cl. 220—284 5 Claims



1. An improved plastic container and closure comprising:

a. an open end container having a bottom and side wall extending upwardly therefrom; a cylindrical collar con-

nected to the side wall through an annular transverse wall, said collar and annular transverse wall having at least one vertical slot therein,

said side wall below the upper edge of the container having an external annular shoulder; and

b. a closure defining a circular disk and a cylindrical skirt extending from the periphery thereof, said skirt on the inside thereof having an annular shoulder spaced from the disk a distance greater than the distance of the shoulder on the container from its upper edge so that when the closure is fitted over the container the skirt fits between the container wall and collar and the shoulder on the skirt snaps over the shoulder on the container to maintain the closure in a fitted position.

4,385,712

AUTOMATICALLY AND SEMIAUTOMATICALLY UNJAMMING NAIL SELECTION DEVICE, DESIGNED PARTICULARLY FOR MACHINES RIVETING FOOTWEAR HEEL SEATS ONTO CORRESPONDING HEELS

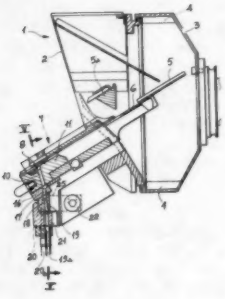
Carlo Maspero, Como, Italy, assignor to Camoga S.a.S. di Mascetti Attilio & C., Milan, Italy

Filed Sep. 17, 1980, Ser. No. 187,989

Claims priority, application Italy, Sep. 20, 1979, 25892 A/79

Int. Cl.³ G07F *11/00*

U.S. Cl. 221—13 **11 Claims**



1. A nail delivery device for delivering nails from a rotating storage magazine to a plurality of passages, said device comprising:

a selector having slots extending therethrough, each slot having a mouth for receiving a nail to be delivered, and an outlet alignable with one of said passages;

guide means extending between the storage magazine and said selector for guiding passage of nails from the storage magazine to said selector;

actuatable means for moving said selector to-and-fro so as to move said slots from first positions in which the mouths of the slots are positioned for receiving nails from said guide means to second positions in which outlets of said slots are aligned with respective ones of said passages to thereby deliver nails to said passages;

control means for sensing to-and-fro movement of said selector and for generating a first signal when movement is not sensed within a first predetermined time period thereby providing an indication of jamming of said selector; and

said actuatable means being responsive to said signal for oscillating said selector to thereby automatically unjam said selector.

4,385,713

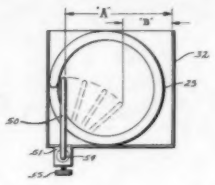
HELICAL VENDING MACHINE WITH PIVOT ROD ADJUSTMENT

William C. Boettcher, Foley, Mo., assignor to D.O.V.E. Equipment Corporation, Winfield, Mo.

Continuation-in-part of Ser. No. 35,421, May 2, 1979, Pat. No. 4,258,860, and a continuation-in-part of Ser. No. 139,991, Apr. 14, 1980, Pat. No. 4,312,460. This application Mar. 27, 1981, Ser. No. 248,558

Int. Cl.³ G07F *11/36*

U.S. Cl. 221—75 **5 Claims**



1. A vending machine item discharge unit comprising:

(a) a tray means having a side wall, a second side wall, rear and bottom walls,

(b) helical means positioned within the tray means having a plurality of convolutions along its length to retain articles to be dispensed in the convolutions,

(c) drive means connected to the helical means to rotate said helical means in predetermined increments upon activation by a customer, and

(d) pivotable rod means having a portion thereof positioned within the helical means toward one side of said tray and movable in the helix toward the second side of said tray to vary the size of the article compartment defined between the rod and the second side wall of said tray.

4,385,714

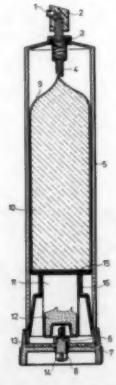
APPARATUS FOR AND METHOD OF SPREADING GASEOUS, LIQUID AND POWDERED MATERIALS

Miklos Szabo, Pasareti u. 75, and Vilmos Weiperth, Dessewffy u.8/10, both of Budapest, Hungary

Filed Nov. 25, 1980, Ser. No. 210,151

Int. Cl.³ B65D *83/06*; B67B *7/24*; B67D *5/54*

U.S. Cl. 222—80 **3 Claims**



1. Apparatus for dispensing material, comprising a casing, a first sealed container of the material to be dispensed disposed within said casing, a second sealed container of propellant also disposed within said casing, means to close said casing, means operable through said closing casing to pierce the second

container thereby to apply the pressure of the propellant to the outside of said first container without admixing the propellant with the material to be dispensed, and means to dispense said material from the interior of said first container under the pressure of said propellant to a point outside said casing, said first container being movable in said casing under the influence of the pressure of said propellant, piercing means within the casing to pierce the first container when the first container moves toward the piercing means under the impetus of said propellant, said dispensing means comprising a dispensing valve for dispensing material from the pierced first container.

4,385,715

ROTARY SLIDING CLOSURE UNIT AND LIQUID MELT CONTAINER EMPLOYING THE SAME

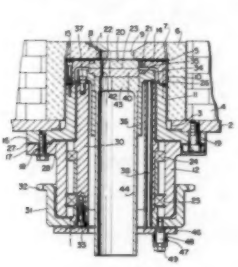
Ernest Meier, Woilerau, and Herbert Bachmann, Ebikon, both of Switzerland, assignors to Stopinc Aktiengesellschaft, Baar, Switzerland

Filed May 5, 1981, Ser. No. 260,724

Claims priority, application Switzerland, May 22, 1980, 4011/80

Int. Cl.³ B22D *41/08*

U.S. Cl. 222—598 39 Claims



21. A rotary sliding closure unit for use in a liquid melt container of the type including an outer jacket, an inner refractory lining, and a pouring opening extending through the lining, said rotary sliding closure unit being adapted to extend inwardly through the jacket and into the lining for selectively blocking and unblocking the pouring opening, said rotary sliding closure unit comprising:

a stationary refractory plate adapted to be positioned within the lining and having therethrough a flow passage adapted to be in communication with the pouring opening;

a rotary refractory plate positioned in sliding abutting contact with said stationary refractory plate and having therethrough at least one flow passage to be selectively moved into and out of alignment with said flow passage of said stationary refractory plate;

said stationary and rotary refractory plates having complementary, abutting relative sliding surfaces adapted to be located within the interior of the outer jacket;

stationary support means for supporting said stationary refractory plate within the lining, said stationary support means comprising a stationary tube member adapted to extend through the jacket and into the lining, said stationary tube member having at an inner end thereof means for fixedly grasping said stationary refractory plate;

rotary support means for supporting said rotary refractory plate against said stationary refractory plate for rotational movement with respect thereto, said rotary support means comprising an intermediate member fixedly grasping said rotary refractory plate, and a rotary tube member adapted to extend through the jacket coaxially with respect to said stationary tube member;

means for connecting an inner end of said rotary tube member to said intermediate member, such that said intermediate member is fixed with respect to said rotary tube member circumferentially thereof, whereby rotation of said rotary tube member imparts rotation to said intermediate member and said rotary refractory plate, but such that said intermediate member is capable of axial movement with respect to said rotary tube member; and

tensioning means for urging said intermediate member axially with respect to said rotary tube member and for thereby urging said rotary refractory plate toward said stationary refractory plate.

4,385,716

WEB CONTROLLING APPARATUS

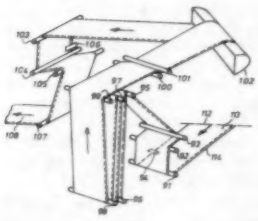
Joseph I. De Roeck, St.Katelijne-Waver; Eric J. Blondeel, Brugge, and Lucien A. Christiaen, Wilrijk, all of Belgium, assignors to AGFA-Gevaert N.V., Mortsel, Belgium

Filed Dec. 30, 1980, Ser. No. 221,450

Claims priority, application United Kingdom, Jan. 1, 1980, 8000093

Int. Cl.³ B65H *25/26*

U.S. Cl. 226—18 10 Claims



1. Apparatus for correcting the path of a travelling web including an imperfect curved web as it leaves an air cushion turning bar, characterized in that such apparatus comprises: a freely rotatable roller, means supporting said roller for bodily axial displacement along a fixed axis, said roller being arranged on said web path as the first contact for a web leaving the turning bar, a second freely rotatable roller downstream of said first and defining between them a stretch of the path which makes an angle with the upstream adjacent portion of said path and is generally perpendicular to the adjacent portion of said path downstream of said second roller, means mounting said second roller for pivotal movement about an axis generally perpendicular to said adjacent portion of said path downstream of said second roller, means for detecting a lateral deviation by said web from its correct path, and operating means actuated in response to said detecting means for effecting axial bodily displacement of said first roller in a direction opposite to said deviation and for substantially simultaneously tilting said second roller about said axis to differentially lengthen the path of

the edge margin on the side of the web opposite the direction of deviation.

4,385,717

Patent Not Issued For This Number

4,385,718

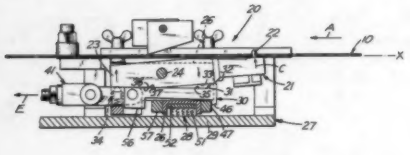
STRIP ADVANCING MECHANISM

Dallas G. Norris, Indianapolis, Ind., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Oct. 9, 1981, Ser. No. 310,251

Int. Cl.³ B65H *17/40*

U.S. Cl. 226—68 **5 Claims**



1. Apparatus for imparting stepwise movement in a longitudinal path to a strip having pilot holes passing laterally therethrough comprising, a frame definitive of such path, a carriage mounted by said frame to be longitudinally movable in relation thereto, a pin coupled with said carriage to be longitudinally movable therewith and laterally movable in relation to said path between positions at which pin is adapted to enter into and to be retracted from a pilot hole in said strip, carraige positioning means for longitudinally positioning said carriage in relation to said frame and including carriage drive means adapted to undergo alternate forward and reverse strokes and coupled to said carriage by a lost motion coupling, said positioning means being operable such that, during a first interval of each such stroke, such carriage and drive means are uncoupled while said carriage remains stationary and, during a second interval of each of such strokes, such carriage and drive means are coupled to longitudinally move together, and pin positioning means responsive to change in the longitudinal relative positioning of said carriage and drive means during the first interval of, respectively, the forward stroke and the reverse stroke of said drive means to move said pin to positions at which, respectively, said pin is adapted to enter into said pilot hole and to be retracted therefrom.

4,385,719

MACHINE FOR INSERTING SPRING PINS

Paul Erskine, Edgecomb, Me., assignor to Mechanical Applications, Inc., Wiscasset, Me.

Filed Apr. 16, 1981, Ser. No. 254,994

Int. Cl.³ H05K *13/04;* **B21J** *15/32;* **B33B** *49/00*

U.S. Cl. 227—116 **5 Claims**

1. A machine for driving a pin into a hole in a work piece, comprising

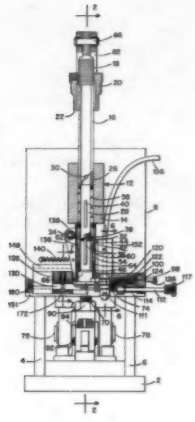
a shuttle including a passage therethrough for receiving and holding a pin,

fixed means supporting said shuttle for lateral movement thereon,

stationary means for placing a pin in said shuttle while supported by said fixed means,

vertically moveable shuttle supporting means,

means for moving said shuttle first laterally from said fixed



means to said vertically moveable supporting means, and then downwardly while supported by said vertically moveable means to a position over a hole in said work piece,

means for driving said pin from said shuttle into said work piece,

and means for returning said shuttle to starting position on said fixed supporting means.

4,385,720

T-SHAPE JOINT AND PREPARATION THEREOF

Wataru Shimada, Takarazuka; Kazumichi Machida, Kawanishi, and Masaru Okada, Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 6, 1979, Ser. No. 73,137

Claims priority, application Japan, Sep. 12, 1978, 53-112600

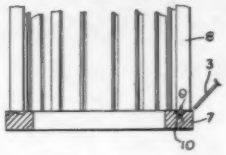
Int. Cl.³ B23K *1/20*

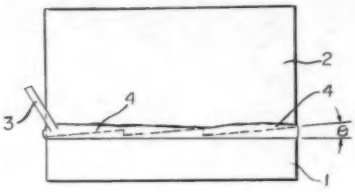
U.S. Cl. 228—166 **4 Claims**

1. A process for preparing a T-shaped joint by brazing or soldering an end face of a substantially vertical base metal onto a surface face of a horizontal base metal which comprises:

forming a slant gap between the joint faces of said vertical base metal and said horizontal base metal by forming a groove in said horizontal base metal so as to widen in a joint longitudinal direction

heating said vertical base metal and said horizontal base metal





contacting said slant gap at the narrowest point of said slant gap with a brazing or soldering alloy member; and

filling said glant gap with said brazing or soldering alloy member from the narrowest part of slant gap to the widest part of said slant gap.

4,385,721

TRAY CORNER STRUCTURE

Robert C. Olsen, Cupertino, and James R. Jensen, Fremont, both of Calif., assignors to Container Corporation of America, Chicago, Ill.

Filed Sep. 8, 1981, Ser. No. 300,399

Int. Cl.³ B65D *5/26*

U.S. Cl. 229—32 **1 Claim**

1. An open top, readily stackable, tray type container formed of a unitary blank of foldable paperboard and comprising:

(a) a generally rectangular bottom wall panel having upstanding therefrom opposed side and end wall panels foldably joined to opposite side and end edges thereof and to each other to form therewith a box-like enclosure open at the top;

(b) each of said side wall panels having at each end thereof;

(i) an inner corner flap having top and bottom edges which are generally parallel for their entire length, being foldably joined to an end edge thereof, extending normal thereto, and being disposed against an adjacent inner surface of a related end wall panel;

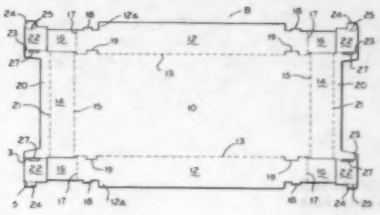
(ii) a lock tab projecting upwardly from an upper edge of said side wall panel;

(iii) a lock opening extending through said side wall panel adjacent a lower edge thereof;

(c) a pair of relatively narrow top wall panels foldably joined to upper edges of respective end wall panels and disposed to extend inwardly therefrom and normal thereto;

(d) each of said top wall panels having at each side thereof;

(i) an outer corner flap foldably joined to a side edge



thereof and disposed against an adjacent outer surface of a related side wall panel;

(ii) said outer corner flap having foldably joined to a lower edge thereof a lock tab projecting inwardly therefrom for receipt within a related side wall panel lock opening;

(iii) a lock opening extending therethrough adjacent the side edge of said outer corner flap for receipt of related side wall panel lock tab.

4,385,722

PACKAGING OF ARTICLES

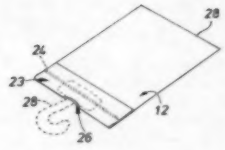
Arthur D. Brewill, Nottingham, England, assignor to Metal Closures Venus Packaging Limited, Ilkeston, England

Filed May 1, 1981, Ser. No. 259,690

Claims priority, application United Kingdom, May 2, 1980, 8014733; Jun. 21, 1980, 8020390

Int. Cl.³ B65D *33/20, 33/36, 33/06, 85/62*

U.S. Cl. 229—62 **15 Claims**



1. A package comprising a body for containing the article(s) to be packaged, the body having a first opening closed by closure means movable to permit access into the interior of the body for removal of the article(s) contained within the body and a second opening for permitting insertion of article(s) into the interior of the body, the body being formed by a pair of opposed layers of plastics material joined together to define peripheral edges of the body and said first and second openings, the first opening being defined by one end edge of a first of said layers and the surface of the second layer, the second layer being extended to define the closure means in the form of a flap, the end edges of the flap being secured by welding to the first and second layers, a coating of a release material being

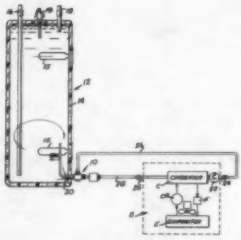
provided between the flap and first layer in the region of the end edges of the flap in order to inhibit welding of the flap end edges to the first and second layers so that on lifting of the flap the flap end edges separate from the first and second layers.

4,385,723

CONNECTION ASSEMBLY

David M. Sanborn, Marietta, and Andrew L. Blackshaw, Dunwoody, both of Ga., assignors to E-Tech, Inc., Atlanta, Ga.

Filed Jul. 22, 1981, Ser. No. 285,864
Int. Cl.³ F28F *27/00*; F24H *1/00*
U.S. Cl. 236—18 **15 Claims**



1. A connection assembly for connecting an external heating unit to a heater water tank through a tank opening in the water tank so that water can be withdrawn from the water tank, circulated through the heating unit for heating, and then returned to the water tank; said connection assembly comprising:

a mounting assembly connected to the tank opening and defining a first passage therein, said first passage having a first opening thereto interiorly of the water tank and a second opening thereto exteriorly of the water tank connected to the heating unit so that water can flow through said passage between the heater water tank and the heating unit;

a tube assembly mounted in said mounting assembly and extending through said first passage into the interior of the water tank said tube assembly defining a tube passage therein closed at the end of said tube assembly in the heater water tank and having an opening thereto exteriorly of the heater water tank and said mounting assembly so that water from the heater water tank is prevented from entering said tube passage; and

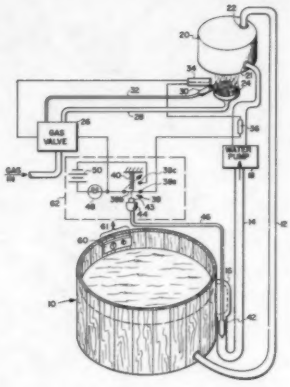
thermostatic control means for controlling the operation of the heating unit, said thermostatic control means including a temperature sensing element mounted in said tube passage adjacent the closed end thereof within the water tank so that said temperature sensing element is exposed to the temperature of the water in the heater water tank through said tube assembly, said thermostatic control means responsive to the temperature of the water in the heater water tank at said temperature sensing element being below a first prescribed temperature to operate the heating unit until the temperature of the water in the heater water tank at said temperature sensing element has been raised to a second prescribed temperature and said thermostatic control means further including connection means extending from said temperature sensing element along said tube passage and out through said opening to said tube passage so that said thermostatic control means can be connected to the heating unit exteriorly of said mounting assembly and the heater water tank.

4,385,724

APPARATUS FOR CONTROLLING THE WATER TEMPERATURE OF A SPA

Larry R. Ramsauer, and Ronald M. Scholer, both of San Jose, Calif., assignors to Ramco Manufacturing, Inc., San Jose, Calif.

Filed Apr. 9, 1981, Ser. No. 252,438
Int. Cl.³ F22B *35/00*; F24H *1/00*
U.S. Cl. 236—25 A **4 Claims**



1. In a water heating apparatus for heating water in a spa and having a heating means coupled to a source of energy through an energy switch wherein water is moved through a line from the spa to close proximity of the heating means by means of a pump wherein the improvement comprises:

(a) a switching means having an operating arm, and contact terminals thereof, said switching means being disposed for operating said energy switch;

(b) a heat sensing bulb containing a heat expanding fluid therein being immersed in the spa water;

(c) a mechanical transducer fluidically coupled to said heat sensing bulb by means of a capillary tube wherein the piston of said transducer is mechanically coupled to an operating arm of said switching means; and

(d) means for adjusting the position of the operating arm of said switching means disposed so as to change the switching point of said switching means, said means for adjusting being located at the spa.

4,385,725

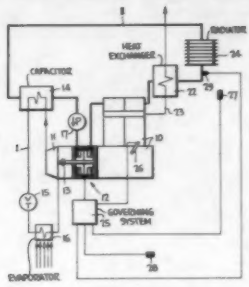
HEAT PUMP ASSEMBLY

Franz Pischlinger, Aachen, Fed. Rep. of Germany, assignor to Klockner-Humboldt-Deutz AG, Cologne, Fed. Rep. of Germany

Filed Feb. 20, 1981, Ser. No. 236,635
Claims priority, application Fed. Rep. of Germany, Feb. 23, 1980, 3006821
Int. Cl.³ B60H *1/02*; F24D *1/04*
U.S. Cl. 237—12.1 **4 Claims**

1. A heat pump arrangement comprising, a refrigeration circuit including a compressor and a condensor, a heating circuit including a heating medium and an internal combustion engine for driving said compressor through a detachable coupling, said heating circuit being in heat exchange communication with said refrigeration circuit through said condensor, for cooling said engine and exhaust gas thereof, said heating circuit also including a braking aggregate directly driven by said engine, said braking aggregate comprising an eddy-current retarder which is directly driven by said engine, a separately powered governing system is provided for controlling the excitation of said eddy-current retarder, said retarder including

a rotor mounted on the crankshaft of said engine and further including a stator having heating medium passages which are connected to cooling passages of said engine located in the



engine casing, said heating medium passages and said cooling passages being directly connected into said heating circuit whereby the heating medium of said heating circuit flows therethrough.

4,385,726

METHOD OF PREHEATING MOTOR VEHICLES WITH INTERNAL COMBUSTION ENGINES

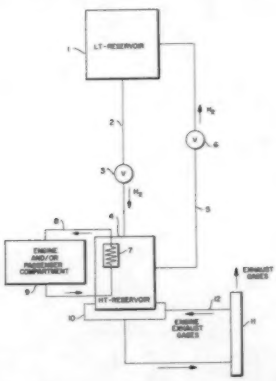
Otto Bernauer, Weinstadt, and Helmut Buchner, Wendlingen, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed May 16, 1980, Ser. No. 150,291

Claims priority, application Fed. Rep. of Germany, May 26, 1979, 2921451

Int. Cl.³ B60H *1/02*

U.S. Cl. 237—12.3 C **5 Claims**



1. A method of preheating vehicles with internal combustion engines without consuming heating material by employing the heat which is given off when hydrogen is transferred from a low-temperature hydride reservoir to a high-temperature hydride reservoir, characterized in that

the high-temperature reservoir is initially at a temperature below the reaction temperature which is required for absorption of hydrogen by the high-temperature reservoir hydride-forming material contained therein,

the low-temperature reservoir is placed in communication with the high-temperature reservoir to allow the introduction of hydrogen from the low-temperature reservoir into the high-temperature reservoir,

the high-temperature reservoir contains in addition to the high-temperature reservoir hydride-forming material contained therein, a sufficient quantity of low-temperature reservoir hydride-forming material that when the hydrogen is introduced from the low-temperature reservoir to the high-temperature reservoir, the quantity of heat which is initially released in the low-temperature reservoir hydride forming material in the high-temperature reservoir is sufficient to raise the high-temperature reservoir hydride forming material to the reaction temperature which is required for the absorption of hydrogen,

the low-temperature reservoir contains a reservoir hydride-forming material above which the hydrogen pressure at room temperature is at least 5 bars higher than the hydrogen pressure above the low-temperature reservoir material in the high-temperature reservoir at the same temperature,

the amount of heat further released in the high-temperature reservoir is used to preheat the vehicle by heat exchange with the vehicle passenger compartment and/or the engine, and

the exhaust heat released by the engine during operation is used to desorb the hydrogen from the hydride-forming material in the high-temperature reservoir and to transfer the hydrogen back to the low-temperature reservoir.

4,385,727

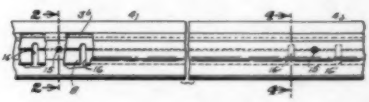
IRRIGATION EMITTER TUBE

Lloyd Spencer, 220 Patrician Way, Pasadena, Calif. 91105

Continuation-in-part of Ser. No. 45,781, Jun. 5, 1979, abandoned, which is a continuation of Ser. No. 911,187, May 31, 1978, abandoned, which is a continuation of Ser. No. 729,038, Oct. 4, 1976, abandoned, which is a continuation-in-part of Ser. No. 570,382, Apr. 22, 1975, Pat. No. B570,382. This application Oct. 22, 1980, Ser. No. 199,524

Int. Cl.³ B05B *15/02*

U.S. Cl. 239—107 **13 Claims**



1. An irrigation emitter tube, comprising:

a. a continuous flexible flow tube normally flat except for a longitudinally extending arched portion, the tube expansible in response to internal water pressure toward an essentially cylindrical configuration;

b. the flow tube having a series of aligned outlets;

c. a longitudinally extending internal strip attached to the flow tube at one margin, its opposite margin being unattached, a surface of the strip being in confronting relation to the inner surface of the arched portion;

d. the internal strip including a portion covering at least one of the outlets and having at least one inlet spaced therefrom;

e. the confronting surfaces of the internal strip and flow tube defining a flush flow passage connecting each inlet and corresponding outlet;

f. one wall surface of each flush flow passage having a drip channel;

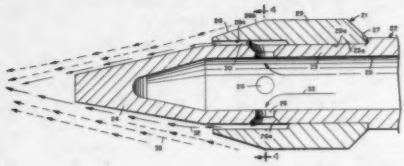
g. the internal strip being collapsible under relatively low water pressure into surface contact with the flow tube thereby confining flow to the corresponding drip channel.

4,385,728

FLOW-AMPLIFYING NOZZLE

Leslie R. Inglis, and Joseph E. Peter, both of Cincinnati, Ohio, assignors to Vortec Corporation, Cincinnati, Ohio

Filed Jan. 30, 1981, Ser. No. 230,012
Int. Cl.³ B05B 1/06, 1/30
U.S. Cl. 239—424 8 Claims



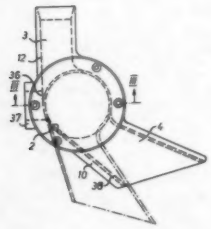
1. A two-piece flow-amplifying nozzle, comprising an elongated one-piece rigid tube having a passage-providing cylindrical portion and a tapered nose portion integral therewith, a plurality of radial openings in said cylindrical portion, and a collar extending about said cylindrical portion and having a flow-directing section and an attachment section, said flow-directing section having a bore sufficiently greater in diameter than the outside of said cylindrical portion to define a flow-directing passage communicating with said openings and leading towards said nose portion, said attachment section being secured to said cylindrical portion in fluid-sealing relation along the surface of said cylindrical portion remote from and spaced between said nose portion and the end of said one-piece tube opposite from said nose portion.

4,385,729

SPREADER FOR GRANULAR SPREADING MATERIAL

Hans Wiederkehr, Ifangstrasse 107, Rümlang, Switzerland

Filed Nov. 14, 1980, Ser. No. 208,500
Claims priority, application Switzerland, Nov. 15, 1979, 10210/79; Nov. 7, 1980, 8302/80
Int. Cl.³ E01C 19/20
U.S. Cl. 239—689 5 Claims



1. A spreading device for spreading granular material comprising the combination of

a spreader housing having means defining an inlet conduit, an outlet conduit and a rotor chamber between said inlet and outlet conduits,

said rotor chamber having cylindrical wall portions,

said outlet conduit having a generally rectangular passageway in cross section, one wall of said passageway being straight, flat and tangential to a wall portion of said rotor chamber,

said inlet conduit having a wall portion tangential to said wall portion of said rotor chamber, and

the central axes of said inlet and outlet conduits forming an obtuse angle of between about 130° and 170°;

a rotor in said rotor chamber, said rotor having

a hub, and

a plurality of spaced rows of radially extending flexible bristles;

said rows being arranged so that at least two rows fit against the cylindrical wall portions of said chamber;

a drive motor; and

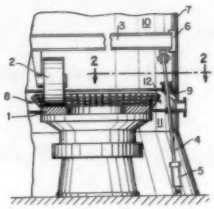
resilient coupling means interconnecting said drive motor and said rotor hub.

4,385,730

ROLLER MILL

Helge C. C. Kartman, Copenhagen, Denmark, assignor to F. L. Smidth & Co., Cresskill, N.J.

Filed Oct. 6, 1980, Ser. No. 194,589
Claims priority, application United Kingdom, Oct. 18, 1979, 7936199
Int. Cl.³ B02C 23/24
U.S. Cl. 241—57 13 Claims



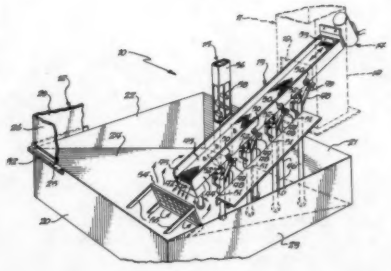
1. A roller mill comprising a grinding table rotatable about a substantially vertical axis and defining a grinding path, at least one grinding roller urged against the grinding table, a nozzle ring assembly including a plurality of generally annular spaced apart guide vanes positioned one above the other for directing substantially all of the air generally horizontally over the grinding path.

4,385,731

APPARATUS FOR PRODUCING AND SEPARATING FINES OF A CRUSHABLE MATERIAL

Peter A. Balistreri, 1412 S. Park Ave., Buffalo, N.Y. 14220

Filed Sep. 28, 1981, Ser. No. 306,324
Int. Cl.³ B02C 19/00
U.S. Cl. 241—79.1 5 Claims



1. Apparatus for producing and separating fines of a crushable material, comprising:

crushing means including a housing having an upper inlet and a lower outlet, and including means for crushing material passing from said inlet toward said outlet;

an enclosure having an inclined bottom;

an inclined chute arranged to receive material from said outlet and extending into said enclosure;

a vibrator operatively arranged to selectively vibrate said chute;

conveyor means operatively arranged to convey material accumulating on the bottom of said enclosure to said inlet;

pneumatic means operatively arranged to supply an upward flow of air through the bottom of said enclosure to increase the quantity of airborne fines within said enclosure; and

vent means operatively arranged to permit withdrawal of airborne fines of said material from said enclosure.

4,385,732

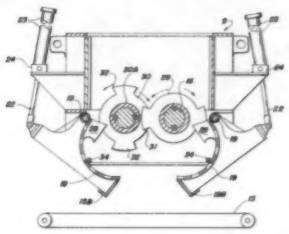
WASTE MATERIAL BREAKING AND SHREDDING APPARATUS

Robert M. Williams, 16 La Hacienda, Ladue, Mo. 63124

Filed Aug. 29, 1980, Ser. No. 182,666

Int. Cl.³ B02C *13/00*

U.S. Cl. 241—236 **8 Claims**



1. Apparatus for reducing waste material comprising: a frame defining a working chamber having a waste material receiving opening and a waste material discharge; a pair of substantially parallel shafts operably supported in said frame above said discharge; drive means connected to said pair of shafts for rotating said shafts in forward and reverse directions; cutter teeth carried by each shaft in spaced apart positions such that cutter teeth on one shaft interfit in the spaces between cutter teeth on the other shaft for either direction of shaft rotation, said cutter teeth on each shaft being formed with radially projecting teeth effective for reducing waste material in either direction of shaft rotation; cage means operably carried by said frame for movement into selected fixed position, one of which positions is to extend across said working chamber discharge, said cage means carrying a series of comb elements fixed thereon and presented inwardly toward said cutter teeth such that for shaft rotation to move said radially projecting teeth past said fixed comb elements, said comb elements and projecting teeth cooperate to break elongated waste material over said comb elements in either direction of rotation, and being divided into two parts for meeting at a position below said pair of shafts; and actuator means connected to said cage means for moving said cage means between positions withdrawn from said working chamber discharge for releasing non-reducible material and positions selectively extending across said working chamber discharge for sizing the waste material.

4,385,733

SPARE TOILET TISSUE HOLDER

Charles B. O'Keefe, 2579 N. Miller Rd., Scottsdale, Ariz. 85257

Filed May 11, 1981, Ser. No. 262,300

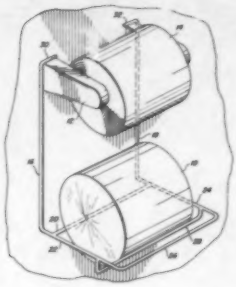
Int. Cl.³ B65H *19/04*

U.S. Cl. 242—55.3 **9 Claims**

1. A spare toilet tissue roll holder for mounting on an existing toilet tissue dispenser, comprising:

first and second substantially vertical trunk members each having an upper portion for engaging said dispenser on opposite sides thereof and being supported thereby;

a substantially rectangular frame portion coupled to lower portions of said first and second trunk members and extending substantially perpendicularly therefrom; and



a support member coupled to opposite sides of said frame portion for supporting a spare roll of toilet tissue.

4,385,734

RING WITH RIB FOR WINDING MAGNETIC TAPE

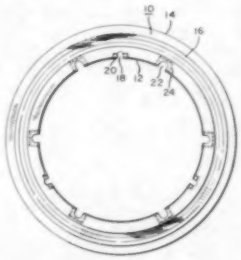
Haruo Shiba, Tokyo, Japan, assignor to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Jan. 13, 1981, Ser. No. 224,688

Claims priority, application Japan, Feb. 5, 1980, 55-13040[U]

Int. Cl.³ B65H *75/18*

U.S. Cl. 242—68.5 **3 Claims**



1. An annular ring for receivably winding narrow magnetic tape, the improvement comprising:

a reinforcing annular groove formed on one side of said ring and concentric therewith;

a rib formed on the opposite side of said ring whereby said rib is formed to receive a groove of an adjacent annular ring;

at least one slit formed on the inner surface of said ring for receiving a spline shaft;

a plurality of reinforcing projections formed on said inner surface of said ring;

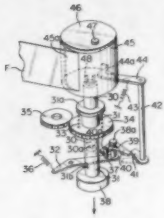
a plurality of recesses formed on said inner surface of said ring and a corresponding plurality of rectangular concaves are each formed around each of said recesses so that said recesses and concaves are formed to receive one of a reinforcing projection on an adjacent ring.

4,385,735

MOTOR DRIVE DEVICE FOR A LONG FILM

Koichi Daitoku, Sagamihara, Japan, assignor to Nippon Kogaku K. K., Tokyo, Japan

Filed Dec. 3, 1980, Ser. No. 212,623
Claims priority, application Japan, Dec. 17, 1979, 54-173438
Int. Cl.³ G03B *1/04*
U.S. Cl. 242—71.1 **3 Claims**



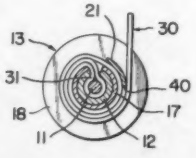
1. A film winding apparatus having a receiving body for receiving a film magazine containing a film spool to be rotated therein, a take-up shaft in said body having a free end provided with a coupling for engaging with said spool from outside of the magazine, the shaft being axially movable between a first position for engaging the coupling with the spool and a second position for disengaging the coupling from the spool, rotation of the take-up shaft being transmitted to the spool when the shaft is in the first position for driving spool, holding means in said body for holding the take-up shaft in the second position, sensing means in said body for detecting the presence of a film magazine therein, and moving means operated by the sensing means for releasing the holding means and displacing the take-up shaft from the second position to the first position responsive to the detection of a film magazine within the receiving body.

4,385,736

RETRACTOR FOR SEAT BELT

Yoshimi Yamamoto, Shizuoka, Japan, assignor to Fuji Kiko Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 5, 1981, Ser. No. 240,974
Claims priority, application Japan, Mar. 26, 1980, 55-40130[U]
Int. Cl.³ A62B *35/00*; B65H *75/48*
U.S. Cl. 242—107 **6 Claims**



1. A retractor for a seat belt having a folded end and a non-folded portion, the retractor comprising:

(a) a shaft to which the belt folded end is anchored;

(b) a spool arranged concentrically outside the shaft, the spool having an axial slot through which the belt folded and extends to meet the shaft, part of the belt folded end to the outside of the spool being wound on the spool;

(c) an engagement member arranged outside and spaced from the spool, the belt non-folded portion extending through the space between the engagement member and the spool, the space having a thickness slightly greater than that of the belt non-folded portion but less than that of the belt folded end, the boundary between the belt folded end and the belt non-folded portion being adjacent to an edge of the engagement member; and

(d) means for fixing the engagement member to the spool;

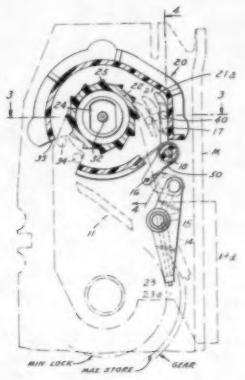
(e) whereby the belt folded end is prevented from being unwound when the belt non-folded portion is fed out.

4,385,737

COMFORT LOCK RELEASE SYSTEM

Ronald S. Gulette, Farmington Hills; James A. Gavagan, Centerline; Carl M. Petersen, III, Drayton Plains, and Steven L. Squires, Ortonville, all of Mich., assignors to Irvin Industries Inc., Madison Hts., Mich.

Filed Dec. 22, 1980, Ser. No. 218,661
Int. Cl.³ A62B *35/02*; B65H *75/48*
U.S. Cl. 242—107.7 **3 Claims**



1. An automotive vehicle dual spool retractable seat belt system automatically locked against extension in occupant restraining position under emergency deceleration conditions, including an automatically retractable shoulder belt having comfort lock means with one-way ratchet and pawl for arresting webbing retraction upon initial extension and retraction to an occupant restraining position followed by slight extension to a comfort position, said comfort lock means including a plurality of annular friction means responsive to shoulder belt spool rotation normally controlling actuation of the comfort lock pawl, a shoulder belt spool windup shaft extension adapted to drive said one-way ratchet, and an automatically retractable lap belt without comfort means to arrest retraction, characterized by an automatic shoulder belt comfort block out means including mechanical means responsive to increasing diameter of webbing wound on the lap belt spool and linkage means responsive to said mechanical means for blocking said pawl from engaging said ratchet, said pawl comprising a bell-crank element actuated by said linkage means, and each ratchet tooth face engaged by said pawl being provided with an open angle in excess of 90° relative to a line passing from the pawl contact point through the center of the pawl pivot in order to provide a component of force from torque on said ratchet assisting pawl disengagement.

4,385,738

PORTABLE SPOOL HOLDER

Colin McDonald, 20241 SE. 232 St., Maple Valley, Wash. 98038

Filed Jul. 7, 1981, Ser. No. 281,086
Int. Cl.³ B65H *49/00*
U.S. Cl. 242—129.6 **7 Claims**

1. A spool holder comprising:

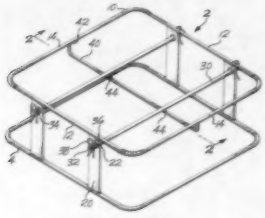
a base;

an essentially rectangular upper loop positioned above and essentially parallel to the base and having two opposite

side members, and two opposite end members which are essentially perpendicular to the side members;

at least two support members, with one such support member connecting the base to an intermediate portion of each side member of the loop;

a cylindrical shaft with two ends, each end being removably attached to one of the support members, and said shaft



being offset from and essentially parallel to the end members of the loop; and

an upwardly opening, U-shaped shaft support having two ends, one of said ends being attached to an intermediate portion of each of the end members of the loop, and said shaft support being essentially perpendicular to the shaft with an upper portion of said shaft support being contiguous to said shaft.

4,385,739

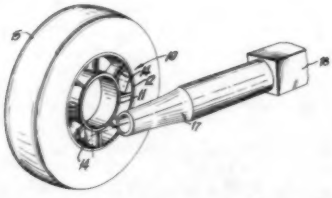
SYSTEM FOR ENHANCING AIRBORNE SAFETY OF AIRBORNE VEHICLES AS WELL AS REDUCING TIRE WEAR THEREOF

John V. Soderberg, 9 Fraternity La., Stony Brook, N.Y. 11790

Filed Apr. 28, 1980, Ser. No. 144,778

Int. Cl.³ B64C *25/36*

U.S. Cl. 244—103 S 6 Claims



1. A system for reducing tire wear of airborne vehicles that utilizes a nozzle outlet for directing a stream of air against blade members, said system comprising:

(a) a housing comprising:

(i) an inner circular ring member and an outer circular ring member, said ring members being concentrically positioned about a common axis;

(ii) blade members symmetrically positioned about said common axis of said ring members, said blade members having their opposite edges structurally affixed to said ring members so as to create a rigid mechanical housing wherein said blade members define a curved plane surface having a horizontal cross section that is defined as an arc while having a vertical cross section configuration defined as rectangular, the spacing between said blade members being equally uniform between said blade members relative to any respective location on said blade members, said blade members, at a center point thereof, being $\sqrt{2}/2$ times the nozzle diameter of said nozzle outlet apart from each other as measured by the chord connecting said blade member center points and defined by an arc passing through the center points of said blade members whose radius is centered about said common axis of said inner circular ring member and said outer circular ring member, said radius being of a length equal to the distance from said common axis of said inner circular ring member and said outer circular ring member to the center point of said blade members;

(b) means for structurally affixing said housing to the rim of a wheel of an airborne vehicle;

(c) means for generating a stream of air;

(d) means for directing said stream of air against said blade members of said housing in a controlled fashion wherein a control valve is utilized within said means for directing said stream of air to selectively regulate the flow of said stream of air and a nozzle outlet is utilized within said means for directing said stream of air for channeling said stream of air against said blade members, said stream of air being channeled by said nozzle against said blade members at a point defined by the intersection of the axis of said nozzle outlet with a plane perpendicular to the axis of said housing and centered with regard to said housing and a point located at the center point of a blade member when said blade member is at the bottom of its rotational traverse about the axis of said housing, the angle between the axis of said nozzle outlet and a plane perpendicular to the axis of said housing being between 40° and 60°.

4,385,740

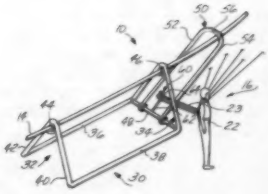
KITE ARTICLE CARRIER

Gary L. Smith, 355 Crooked Creek Dr., Oxford, Mich. 48051

Filed Apr. 7, 1981, Ser. No. 251,884

Int. Cl.³ A63H *27/08*; B64C *31/06*

U.S. Cl. 244—155 R 11 Claims



1. An article carrier for use with a kite which is adapted to be slidably urged upwards along a kite string, the article carrier comprising:

a body;

means, mounted on the body, for slidably attaching and supporting the body on the kite string:

a lever arm having a first end pivotally attached to one end of the body, the lever arm adapted to ride along the kite string at a second end;

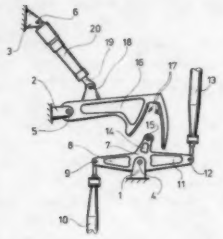
a retainer member secured to the body adjacent the lever arm, the retainer member adapted for releasable attachment of the article thereon; and

actuating means adapted to be disposed at a predetermined position along the kite string such that the lever arm engages the actuating means and pivots upwardly to contact and urge the article from the retainer member causing its release from the article carrier.

4,385,741
AIRCRAFT STEERING MECHANISM

Wolfgang Mootz, Plaisance du Touch, France, assignor to Messerschmitt-Boelkow-Blohm GmbH, Munich, Fed. Rep. of Germany

Filed Feb. 13, 1981, Ser. No. 234,255
Claims priority, application Fed. Rep. of Germany, Feb. 19, 1980, 3006087
Int. Cl.³ B64C *13/16, 13/24*
U.S. Cl. 244—230 **7 Claims**



1. A steering mechanism for transmitting a control input to a controlled means in response to given control parameters, comprising walking-beam means, control input means operatively connected to said walking-beam means, control output means operatively connected to said walking-beam means for transmitting a control force to said controlled means, a free-end stop member operatively secured to said walking-beam means, fork means having fork prongs operatively arranged for cooperation with said free-end stop member so that the stop member may reach with its free end into a wedge shaped space formed between the fork prongs, and control parameter input means operatively connected to said fork means for moving said fork means in response to said control parameters whereby said free-end member dips into said wedge shaped space to an extent determined by said control parameters so that said walking-beam means operates as a continuous control input translator, the translation characteristic of which varies in accordance with said control parameters, and wherein said walking-beam means comprises two lever arms tiltable about a common journal axis, said control input means comprising first rod means pivoted to one of said lever arms, said control output means comprising second rod means pivoted to the other lever arm, said free-end stop member comprising a further lever arm operatively connected at one end to said two lever arms of said walking beam means, and wherein said fork means comprise fork lever means pivoted at one end thereof and carrying said fork prongs at the opposite end thereof, said control parameter input means comprising adjustment means operatively connected to said fork lever means and having a length which is variable in response to said control parameters.

4,385,742
HANGING PLANTER APPARATUS

Camille J. Rocquin, 1410 Demosthenes St., Metairie, La. 70005

Filed Nov. 24, 1980, Ser. No. 209,731
Int. Cl.³ A47H *1/10*
U.S. Cl. 248—318 **3 Claims**

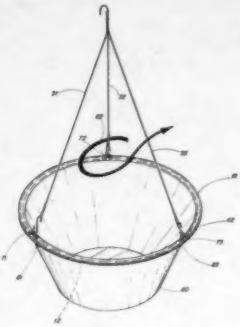
1. An apparatus for hanging plant pots having an annular lip portion, comprising:

a. a continuous wire surrounding the exterior of the pot to be hung directly below and in contact with the lower surface of the lip portion of the pot to be hung;

b. at least three upper extending loop portions of said wire, said loop proportions extending through orifices in said lip portion, providing attachment points thereon to;

c. at least three hanger wires, a first and of each form a connection between each of said upper extending proportions;

d. at least three modified "S" hooks defining a first lower loop portion for connecting onto each of said upward loop

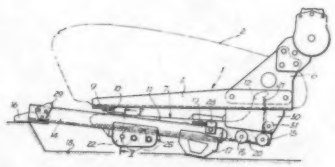


portions and a second upper loop portion for connecting onto the ends of each of said hanging wires.

4,385,743
FRAME FOR A LONGITUDINALLY AND HEIGHT-ADJUSTABLE VEHICLE SEAT

Paul Werner, Remscheid, Fed. Rep. of Germany, assignor to Keiper Automobiltechnik GmbH & Co. KG, Remscheid, Fed. Rep. of Germany

Filed Jul. 31, 1980, Ser. No. 174,135
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1979, 2933092
Int. Cl.³ A45D *19/04*; B60H *1/00*
U.S. Cl. 248—393 **12 Claims**



1. A frame for a seat in a vehicle, comprising:

bracket means for carrying the seat;

joint means for hinging the bracket means for pivotable movement about an axis running laterally under the seat;

runner means, connected to the joint means, for extending longitudinally under the seat;

rail means for guiding linear movement of the runner means therein;

rack means for adjusting the rearward height of the seat, said rearward height adjusting rack means forming unitary structural components with their associated runner means; and

means for anchoring the rail means to a floor of the vehicle.

4,385,744
ANTI-THEFT FRAME HANGING SYSTEM

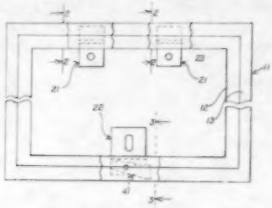
Charles F. Sherman, Townsend; Mark T. Cole, Acton, both of Mass., and Helmar Nielsen, Manchester, N.H., assignors to Nielsen Moulding Design Corporation, Townsend, Mass.

Filed Mar. 2, 1981, Ser. No. 239,392
Int. Cl.³ F16M *13/100*
U.S. Cl. 248—551 **18 Claims**

1. A frame apparatus comprising:

a frame body adapted to retain a display article and having a rear surface for attachment to a support surface;

securing means comprising releasable latch means for attaching said rear surface to the support surface and movable between locked and release positions, said latch means preventing removal of said frame body from the support surface when in said locked position and allowing removal thereof when in said release position, said latch



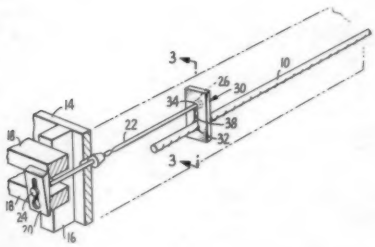
means comprising bias means biasing said latch means into said locked position and release means operable to move said latch means into said release position to allow removal of said frame body, and wherein said release means is disposed between and substantially concealed by said frame body and the support surface.

4,385,745

REBAR-CONNECTED SUPPORT MEANS FOR CONCRETE FORM PANELS

Steven B. Bennett, Congress, Ariz., assignor to The Burke Company, San Mateo, Calif.

Filed Apr. 29, 1981, Ser. No. 258,659
Int. Cl.³ E04G 17/06
U.S. Cl. 249—41 **3 Claims**



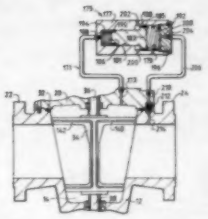
1. Concrete form panel support means comprising a snap tie having a shank portion and having a head portion at the distal end thereof, a connector plate having a keyhole passageway comprising an aperture portion of greater width and a slot portion of lesser width, said tie being received in said slot portion with the head portion engaged with the plate to the sides of the slot portion, and a rebar received in said aperture portion with the plate cocked relative to said rebar whereby the rebar is grippingly engaged by edge portions of the aperture portion, said aperture portion being greater in diameter than said head portion of said snap tie and said rebar to enable the passage through said plate of said head portion and the seating of said plate on said rebar, said slot portion being oversize in relation to said shank portion of said snap tie and undersize in relation to said head portion of said snap tie whereby said plate and said snap tie will have a one-way locking connection with each other when said shank portion is positioned within said slot portion and said head portion engages said plate.

4,385,746

FOUR-WAY PLUG VALVE

Jerry B. Tomlin, Sugar Land, and Herbert H. Hodgeman, Houston, both of Tex., assignors to Daniel Industries, Inc., Houston, Tex.

Division of Ser. No. 31,219, Apr. 18, 1979, Pat. No. 4,286,625. This application Mar. 27, 1981, Ser. No. 248,313
Int. Cl.³ F16K 5/16, 11/083, 39/06
U.S. Cl. 251—56 **5 Claims**



1. A rotary lift-turn type diverter valve mechanism for controlling the flow of fluid, said valve mechanism comprising:

a valve body defining a frusto-conical valve chamber and defining inlet and outlet passages disposed in intersecting relation with said valve chamber;

a bonnet structure connected to said valve body and defining a closure for said valve chamber;

a frusto-conical diverter valve element being positioned for both linear and rotary movement within said valve chamber and including a valve stem extending in sealed relation through said bonnet and a trunnion extending in coaxial relation with said valve stem and being journaled for rotation and linear movement relation to said valve body, said diverter element cooperating with said valve chamber in the seated position of said plug element to define a first valve chamber space between the larger extremity of said plug element and said valve body and a second chamber space between the smaller opposite extremity of said diverter element and said valve body;

pressure multiplying means is provided for introducing fluid pressure into the first valve chamber space for development of a resultant force acting on said diverter element to enhance the sealing ability thereof, said pressure multiplying means having an inlet portion thereof in fluid communication with at least one of the inlet and outlet passages of said valve mechanism and having an outlet portion thereof in fluid communication with said first valve chamber space, said pressure multiplying means having a piston housing being formed to define a piston chamber, and a piston element being movably disposed within said piston chamber and cooperating with said piston housing to define first and second pressure responsive piston areas, said first pressure responsive piston area being larger than said second piston area and being acted upon by the pressure of said one of said inlet and outlet passages, the fluid pressure within said first valve chamber space acting upon said second piston area.

4,385,747

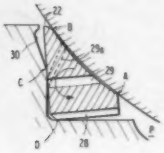
SELF-RELIEVING SEAT AND BALL VALVE INCORPORATING THE SAME

Paul Renaud, Jr., Worcester, and Kenneth Paradis, Leicester, both of Mass., assignors to Worcester Controls Corporation, West Boylston, Mass.

Filed Jan. 7, 1982, Ser. No. 337,904
Int. Cl.³ F16K 5/20
U.S. Cl. 251—315 **20 Claims**

1. A seat ring for a ball valve adapted to seal against a ball in the valve, said seat ring comprising an annular body of elasto-

meric material having a fluid passageway centrally located therein and extending axially therethrough, said annular body having a rear face, a front face spaced from said rear face and extending radially outward of said fluid passageway, and an outer peripheral wall extending between the radial outermost portions of said front and rear faces, said front face including a curved surface which extends radially outward from said fluid passageway and which terminates in cross section in a radial outward direction at a point that is disposed radially inward of



said outer peripheral wall, at least one first pressure relief passageway extending completely through said annular body from the rear face thereof to the region of said front face between said outer peripheral wall and the radial outward termination of said curved surface, and at least one second pressure relief passageway extending completely through said annular body from the rear face of said body to a region of said curved surface located between said axial fluid passageway and the radial outward termination of said curved surface.

4,385,748

ROTARY STEEL CONVERTER

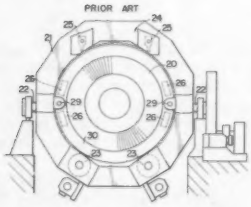
Keikichi Murakami, Kobe, Japan, assignor to Kawasaki Jukogyo K.K., Kobe, Japan

Division of Ser. No. 103,619, Dec. 14, 1979, Pat. No. 4,298,378. This application Jun. 25, 1981, Ser. No. 278,007

Claims priority, application Japan, Dec. 22, 1978, 53-163691

Int. Cl.³ C21C *5/50*

U.S. Cl. 266—44 **8 Claims**



1. A method of making steel, comprising the steps of:

(a) providing a steelmaking converter with a vessel coaxially encircled, and rotatably supported about its centerline axis by a trunnion ring, which in turn is rotatably supported about a stationary axis transverse to a centerline axis, mounting a plurality of radial support rollers on the trunnion ring causing substantially uniform distribution throughout the circumference of the trunnion ring and for engagement with two parallel axially spaced tires on the vessel, respectively, to thereby bear the radial load of the vessel, mounting a plurality of axial support rollers on the trunnion ring for substantially uniform distribution throughout the circumference of the trunnion ring, permitting engagement with said two tires, respectively, for bearing the axial load of the vessel;

(b) rotating the vessel about its centerline axis at a speed of 1 to 30 revolutions per minute for stirring and intermingling molten pig iron, scrap and various admixtures within the vessel during refining, while the vessel is tilted at angles of from 0 to about 15 degrees with respect to the perpendicular; and

(c) blowing oxygen into the rotating vessel.

4,385,749

METHOD AND A DEVICE FOR REPAIRING THE TAP HOLE OF A STEEL CONVERTER

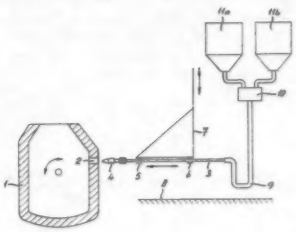
Gerardus A.C. van der Linden, 86, Wenckebachstraat, Velsen, Netherlands

Continuation-in-part of Ser. No. 141,471, Apr. 18, 1980, abandoned, which is a continuation of Ser. No. 442,454, Feb. 14, 1974, abandoned, which is a continuation of Ser. No. 137,849, Apr. 27, 1971, abandoned. This application Apr. 28, 1981, Ser. No. 258,055

Claims priority, application Netherlands, Apr. 28, 1970, 7006218

Int. Cl.³ C21C *5/44*

U.S. Cl. 266—45 **12 Claims**



1. A method of regulating the tapping time of a steel converter by maintaining the tap hole diameter thereof by repairing the tap hole present in the side wall of a steel converter to restore same to a preselected diameter after the diameter thereof has been increased between about 1–5 mm by reason of molten steel passing therethrough during a tapping operation, said method comprising moving elongated jet spray means centrally into the eroded tap hole present in the side wall of the converter after the diameter thereof has been increased between about 1 to 5 mm and while the tap hole present in the side wall of the converter is still hot as a result of the tapping of the converter, spraying refractory mortar material radially outwardly in a simultaneously circular direction onto the eroded surface of the inner periphery of the wall forming the tap hole to restore the diameter of the tap hole to approximately its preselected diameter and thereafter withdrawing said jet spray means from the tap hole.

4,385,750

THERMAL CUTTING MACHINE

Franz Hennecke, Arnsberg, Fed. Rep. of Germany, assignor to I.P.U. Ltd., Nassau, The Bahamas

Continuation of Ser. No. 74,170, Sep. 10, 1979, abandoned. This application May 26, 1981, Ser. No. 266,980

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1978, 2839449

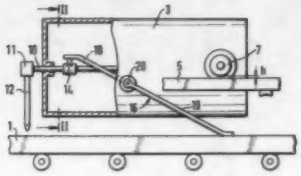
Int. Cl.³ B23K *7/02, 7/10*

U.S. Cl. 266—69 **20 Claims**

1. A thermal cutting machine for laterally cutting a strand of metal which is displaced in a first longitudinal direction by a first means for displacing the strand, comprising:

a car which is adapted to travel on rails aligned in said first direction, a movable cutter carried by said car, and second

selectively engageable means for fixedly positioning said car with respect to said strand by engaging the top surface



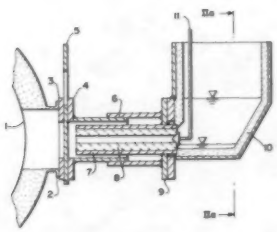
of the strand, and third means for automatically selectively engaging said second means.

4,385,751

APPARATUS FOR DISCONTINUOUS CHARGING OF MOLTEN METAL INTO A VACUUM CHAMBER

Torstein Saether, Sunndalsora, and Bjarne Heggset, Frei, both of Norway, assignors to Ardal og Sunndal Verk A/S, Oslo, Norway

Filed Sep. 30, 1981, Ser. No. 307,363
Claims priority, application Norway, Jun. 30, 1980, 801956
Int. Cl.³ C21D 7/10
U.S. Cl. 266—207 **3 Claims**



1. An apparataus for transferring molten metal into a vacuum chamber, said apparatus comprising:

a valve adapted to be mounted on the vacuum chamber for movement between a closed position blocking an inlet to the vacuum chamber and an opened position unblocking the inlet;

a tundish adapted to receive molten metal;

a transfer pipe fixed to a bottom portion of said tundish, said transfer pipe having an input orifice opening into the interior of said tundish and an exit orifice; and

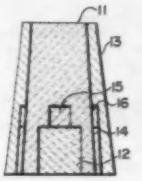
guide means, adapted to be fixed to the vacuum chamber, for mounting said transfer pipe and said tundish to permit rotational movement of said transfer pipe and said tundish about the axis of said transfer pipe, such that said input orifice may be moved between positions above and below the surface of the molten metal in said tundish, and to permit axial movement of said transfer pipe and said tundish between a molten metal delivery position, whereat said exit orifice extends through said valve, when in said opened position thereof, and into the vacuum chamber, and a position whereat said exit orifice is withdrawn to the exterior of said valve.

4,385,752

POROUS PLUG FOR MOLTEN METAL VESSEL

Yoshihiro Hayashi, Ohtsu, Japan, assignor to Aikoh Americs Corp., Westlake, Ohio

Filed Jan. 15, 1982, Ser. No. 339,412
Int. Cl.³ C21B 7/16
U.S. Cl. 266—265 **21 Claims**



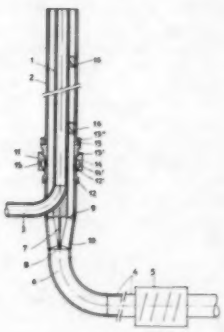
1. A porous plug for treating molten metal comprising a body having an axis, said body being made of porous refractory material through which gas is blown for introduction into the molten metal, and wear detection refractory means in transaxial juxtaposition with said body over a portion of the axial height of said body, said wear detection refractory means having an emissive power different from that of said body for providing a discernible indication of the extent of wear of said body.

4,385,753

TUYERE FOR THE SIMULTANEOUS AND SEPARATE INTRODUCTION OF AT LEAST ONE GAS AND ONE POWDER MATERIAL

Pierre J. Leroy, Saint-Germain-en-Laye; Maurice Deschamps, Roche-la-Moliere, both of France, and Emile Sprunck, 5 rue Joffre, 57250 Moyeuvre Grande, France, assignors to Creusot-Loire and Emile Sprunck, both of Paris, France

Filed Mar. 2, 1981, Ser. No. 239,742
Claims priority, application France, Mar. 5, 1980, 80 04932; Jan. 27, 1981, 81 01489
Int. Cl.³ C21B 7/16
U.S. Cl. 266—268 **6 Claims**



1. Tuyere for the simultaneous but separate introduction into a metallurgical vessel of at least one gas and one powdered material, said tuyere comprising

(a) a non-external tube for the introduction of said gas;

(b) at least one tube concentric with said non-external tube for the introduction of said powdered material exclusively, without the use of a carrier gas;

(c) means for lubricating the inner wall of the tube receiving said powdered material, comprising at least one orifice in the wall of the latter tube; and

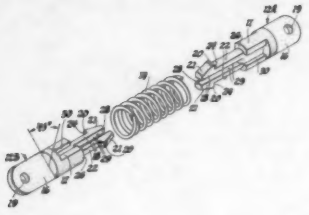
(d) means for propelling said powdered material into said lubricated tube;
(e) means for protecting said tuyere against hot wear by an agent in said at least one tube exterior to said non-external tube;
(f) whereby abrasive action of said powdered material on the walls of said tubes is substantially avoided.

4,385,754

SPRING-BIASED LOST-MOTION LINK ASSEMBLY

Lynn E. Waite, Gasport, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 16, 1981, Ser. No. 244,320
Int. Cl.³ F16F *1/12*
U.S. Cl. 267—71 **2 Claims**



1. A spring-biased lost-motion link assembly comprising a pair of interlocking substantially identical link members and a helical-coil compression spring operatively arranged therebetween, each said link member having a forked end with two prongs, each said prong having a pair of spring seats spaced therealong, the prongs on each link member being forcibly inwardly deflectable toward each other sufficiently to allow their insertion one link member at a time through said spring and then on release of the deflecting force assuming a normal undeflected state entrapping said spring between the springs seats on both prongs opposite the respective ends of said spring, the prongs on each link member having a longitudinally extending space therebetween sufficiently wide in their normal undeflected state to accommodate deflection of the prongs on the other link member so that the prongs on one link member can first be inserted in said spring and then the prongs on the other link member can next be inserted thereby entrapping said spring opposite all said seats, and each said link member further having a pair of longitudinally extending grooves for receiving a terminal portion of the prongs on the other link member in their normal undeflected state with said spring assembled thereon to thereby define a tongue and groove interlock between said link members to both establish and maintain alignment of said link members and prevent inward prong deflection and thereby disengagement of said prongs from said spring whereby entrapment of said spring is maintained and said link members are effective to transmit both a push and pull force without relative longitudinal movement between said link members below a predetermined push or pull force and permit limited relative longitudinal movement between said link members contracting or extending the link assembly by compressive action of said spring between said seats upon encountering forces above said predetermined push or pull force.

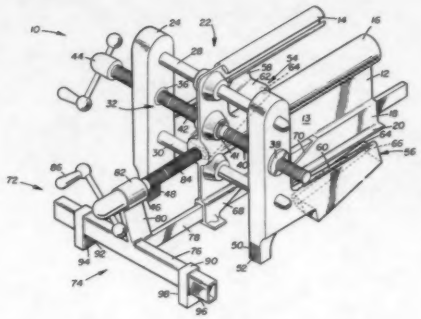
4,385,755

CLAMPING DEVICE

Gary I. Mawer, Paradise, Calif., assignor to Face Maker Industry, Paradise, Calif.

Filed Apr. 16, 1981, Ser. No. 254,604
Int. Cl.³ B25B *1/20*
U.S. Cl. 269—41 **12 Claims**

1. An apparatus comprising:
first clamp means adapted for clamping onto a first workpiece;
second clamp means adapted for clamping onto another workpiece and for positioning the another workpiece adjacent the first workpiece;
guide means adapted for guiding a fastener into the workpieces to hold the workpieces together;
a body;



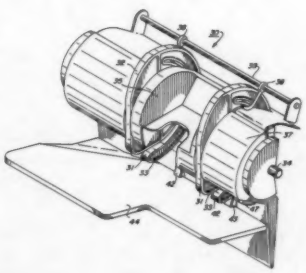
wherein said first clamp means includes first and second arms and means for selectively and positionably mounting said arms relative to said body;
wherein said second clamp means includes a member and means for mounting said member relative to said body and for selectively positioning said member relative to said first and second arms; and
wherein said guide means includes first and second guides secured to the first and second arms respectively.

4,385,756

SHEET INVERTING AND STACKING APPARATUS

Jack Beery, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 29, 1980, Ser. No. 182,340
Int. Cl.³ B65H *29/40*
U.S. Cl. 271—186 **13 Claims**



1. A sheet inverting and stacking apparatus comprising;
a sheet inverter wheel including at least one arcuate sheet retaining slot into which a sheet may be inserted, said slot being sufficiently long in arcuate length to accommodate at least a substantial portion of the length of a sheet to be inverted without the leading edge of the sheet contacting the end of the slot, said inverter wheel comprising a fixed member having a continuous generally cylindrical surface from a load position to an unload position, said cylindrical surface having a hand indent between the load and unload position to facilitate manual sheet removal,

means to incrementally rotate said sheet inverter wheel from said sheet load position to said sheet unload position,

sheet drive means to drive a sheet in a forward direction into said slot when said inverter wheel is in the load position; the distance between the sheet drive means and the end of the slot in the inverter wheel when in the load position being greater than the length of a sheet to be fed whereby the leading edge of the sheet does not contact the end of said slot,

a sheet stripper registration member at the unload position to strip a sheet from within the slot and register its leading edge.

4,385,757

APPARATUS FOR CONVERTING A STREAM OF SHEETS INTO DISCRETE STACKS

Hans Müller, Zofingen, Switzerland, assignor to Grapha-Holding AG, Hergiswil, Switzerland

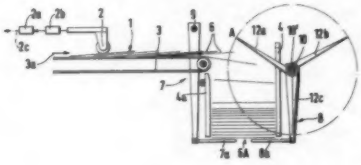
Continuation of Ser. No. 966,363, Dec. 4, 1978, abandoned, which is a continuation of Ser. No. 787,574, Apr. 14, 1977, Pat. No. 4,139,191. This application Aug. 13, 1980, Ser. No. 177,737

Claims priority, application Switzerland, Apr. 23, 1976, 5116/76

The portion of the term of this patent subsequent to Feb. 13, 1996, has been disclaimed.

Int. Cl.³ B65H *29/34*

U.S. Cl. 271—189 **6 Claims**



1. An apparatus for converting streams of sheets or analogous commodities into discrete stacks, particularly for converting streams of partially overlapping imprinted sheets into stacks of fully overlapping sheets, comprising:

(a) means for feeding a stream of commodities along a predetermined path having a discharge end;

(b) means defining a receiving space which is located at the discharge end of said path and in which commodities from the stream pile up to form a stack;

(c) means for interrupting the growth of a stack without interrupting movement of the stream, said interrupting means including an element which is mounted on a fixed axis for indexing between a first position in which said element is interposed between the terminal commodity of a stack being formed and the initial commodity of a stack to be subsequently formed and a second position in which said element is disposed outside of said path and said receiving space; and

(d) means for repeatedly indexing said element to said positions in such a manner as to interrupt the growth of fully grown stacks without interrupting movement of the stream.

4,385,758

BEAD CHAIN STACKER

Daniel H. Ellsworth, Broad Brook, Conn., assignor to Scan Optics, East Hartford, Conn.

Filed Jun. 10, 1981, Ser. No. 272,215

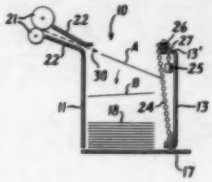
Int. Cl.³ B65H *31/20*

U.S. Cl. 271—224 **10 Claims**

1. A document stacking bin for receiving and stacking documents injected in a free flight path into the bin, wherein the improvement comprises:

at least one bead chain positioned across the flight path of the document so as to intercept its leading edge at a contact point, one end of said bead chain being fixed to the bin and the other end being looped over a portion of the bin; and

at least one weight, said weight being attached to the end of



the bead chain that is looped over a portion of the bin, the mass of the weight and chain being selected such that their combined natural frequency is so low that a significant rearward velocity is not imparted to the document after it is intercepted by the chain and the kinetic energy of the document is substantially absorbed.

4,385,759

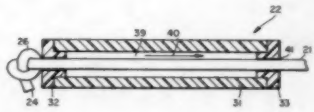
SKIP ROPE

James M. Everroad, 3601 Arlington, Columbus, Ind. 47201

Filed Jun. 4, 1981, Ser. No. 270,575

Int. Cl.³ A63B *5/20*

U.S. Cl. 272—75 **5 Claims**



1. A skip rope with handles at each end, each of said handles having a longitudinal axis and comprising:

a length of rope having two free ends;

a pair of hollow, generally cylindrical handlegrip members open at each end and each having an outside diameter gripping surface and an inside diameter surface which defines a skip rope-receiving region;

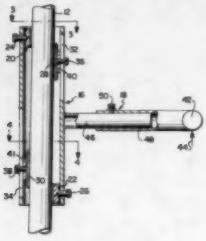
a pair of substantially identical shouldered, generally cylindrical bearing members assembled to each of said handlegrip members, each bearing member being arranged with a reduced-diameter plug portion whose outside diameter measurement is substantially equal to the measurement of said inside diameter surface and an enlarged-diameter head portion whose outside diameter measurement is substantially equal to the measurement of said outside diameter gripping surface and is adapted to be received by said handlegrip member, each of said bearing members defining a through hole adapted to receive said skip rope; and

said length of rope being threaded through each generally cylindrical bearing member and the free ends of said rope being knotted into a diameter size which is greater than the diameter size of said corresponding through hole, the material of said bearing members and the material of said length of rope having a self-lubricating relationship to each other.

4,385,760
ISOKINETIC EXERCISER

E. Michael Mattox; E. Dale Mask, both of Blue Springs, Mo., and Jack D. Beeding, Rockford, Ill., assignors to Newmark Industries, Inc., Blue Springs, Mo.

Filed Aug. 30, 1979, Ser. No. 71,062
Int. Cl.[3] A63B *21/00*
U.S. Cl. 272—131 11 Claims

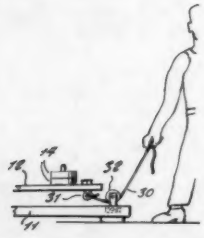


1. An isokinetic exerciser comprising:
a pair of frictionally interengageable structures; and
manually operated means associated with said structures for effecting relative shifting thereof while the same are frictionally interengaged,
said means being disposed to maintain said structures rocked into said interengagement upon the application of manual force to the means tending to effect said relative shifting,
one of said structures including a surface, said other structure including a slide mounted for movement along said surface and a friction component carried by said slide in disposition for wiping engagement with said surface during said movement of the slide, said means including a lever rigid to said slide and adapted to receive the application of said manual force at a point spaced outwardly from said surface for rocking the component toward said surface as the force moves the lever, slide, and friction component along said surface,
said lever being extensible for adjusting the length of the moment arm between said surface and the point at which said manual force is applied to the lever.

4,385,761
WEIGHTED ROTATABLE THERAPEUTIC EXERCISE DEVICE

Max Rice, 1140 Sutter St., Apt. 406, San Francisco, Calif. 94109

Filed Feb. 19, 1981, Ser. No. 235,945
Int. Cl.[3] A63B *21/00*
U.S. Cl. 272—144 1 Claim

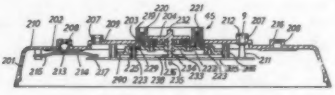


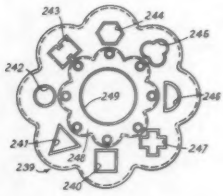
1. A therapeutic exercise device, comprising, in combination, a stationary base, a rotative turntable on said base, stanchions spaced from the turntable and mounted on opposite sides of said base for interchangeably supporting a pipe frame or pipe handles upon said stanchions and means extending through said turntable adapted to be used to support a person while performing various twisting exercises a tow rope, tied at one end to an eye bolt mounted near the periphery of said turntable, said rope leaving passed around a pulley on said base, at a stationary location on said base while the opposite end of said rope is adaptable to be held in the hand of a person so as to be pulled by said person.

4,385,762
ELECTRONIC MATCHING AND INFORMATION ASSOCIATION GAME

Roland Schwartz, Paris, France, assignor to Comano S.A., La Varenne St. Hilaire, France

Filed Apr. 25, 1980, Ser. No. 143,547
Claims priority, application France, Apr. 27, 1979, 79 10923; Dec. 5, 1979, 79 29885
Int. Cl.[3] G09B *19/00*; A63F *9/00*
U.S. Cl. 273—1 GC 26 Claims





10. A game comprising:
a set of pieces having different configurations;
means defining a playing surface;
means in said playing surface defining locations where each piece of said set is to be engaged;
a set of display elements each associated with one of said locations that when activated visibly indicates that a piece is to be engaged with said associated location;
a set of switches each associated with one of said locations and each operable only when a piece having the correct configuration for that location is engaged therewith; and
an electrical operating circuit for said game to which the display elements and switches are connected, said circuit including a timer so that in a given initial period the display elements are activated successively and after said given period only one of said display elements is activated, said means being arranged to respond when the switch corresponding to the activated display element is operated by engagement with a piece of the correct configuration, said display elements being light sources which are flashed during said initial period by said electrical operating circuit by a counter arranged to cause said light sources to flash and an oscillator for controlling the counter.

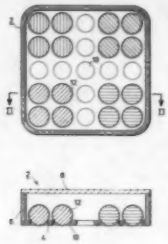
4,385,763
PATTERN FORMING BALL GAME

Ivan Moscovich, 19 Elkachi Str., Afeka-Ramat Aviv, Israel

Filed Jun. 18, 1981, Ser. No. 275,017
Int. Cl.[3] A63F *3/00*; A63B *67/14*
U.S. Cl. 273—86 R 9 Claims

1. A game including a closed container having a top transparent wall and a bottom wall formed with a number of holes therethrough, and a plurality of balls disposed within said container and freely rollable therein, the number of balls

within the container being less than the number of holes through the container bottom wall, and the diameter of said balls being larger than the size of said holes, such that the outer face of the bottom of a ball seated within a hole is substantially flush with the outer face of said bottom wall, the inner face of said bottom wall being flat and uninterrupted except for said



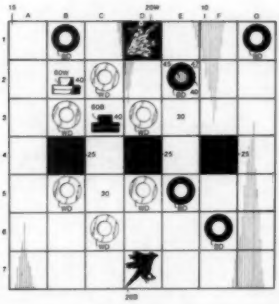
holes, whereby a player may manipulate the balls externally of the container with his finger tips to roll the balls over the container bottom wall so as to seat in different holes in the container bottom wall and thereby to form different patterns of balls therein viewable through the transparent top wall of the container.

4,385,764

GAME OF STRATEGY DIRECTED TO ENTRAPMENT OF OPPONENT

Muhammad A. Bhatti, 317 Knollwood St., Winston-Salem, N.C. 27104

Filed Sep. 14, 1981, Ser. No. 302,166
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—243 **5 Claims**



1. A game of strategy comprising:

(a) a playing board divided into a plurality of squares each square being one of three types, the three types including:

(i) two home squares; each positioned on opposite sides of said playing surface;

(ii) a first plurality of barrier squares comprising a minor portion of the total number of said squares and positioned intermediately of said home squares;

(iii) a second plurality of neutral player landing areas comprising a major portion of the total number of said squares;

(b) one token per player to indicate player movement along said playing surface;

(c) a plurality of disks, one-half of said plurality being designated to each player and utilized one at a time to indicate temporary player possession of one of said landing areas;

(d) a plurality of pegs and means for temporarily assembling each of said pegs within said disks to alter said disks to indicate permanent player possession of one of said landing areas;

(e) said tokens having means for masking the presence or absence of a peg within a disk at times when a token is placed atop a disk;

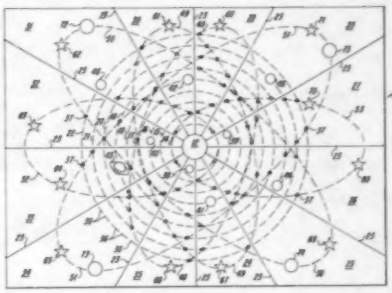
(f) a chance device for determining scope of player movement.

4,385,765

CONQUEST GAME

J. Knox Munn, Arvada; Thomas Roberts, and Curtis L. Stocker, both of Boulder, all of Colo., assignors to Circle Games, Boulder, Colo.

Filed Feb. 23, 1981, Ser. No. 236,983
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—253 **27 Claims**



1. A conquest game comprising:

a game board having a first set of concentric circular orbits inscribed about a common center, a second set of orbits inscribed about said center and intersecting said circular orbits at pre-selected locations, each of said orbits comprising a plurality of discreet movement steps, each of said pre-selected locations corresponding to a discreet movement step of each respective intersecting orbit, said game board having a plurality of lines which divide the game board into a plurality of sectors containing movement steps and having base locations corresponding to each player and associated with selected ones of said orbits;

a plurality of differently identified playing pieces corresponding to each player and adapted for movement along said orbits;

first chance means for determining the number of playing pieces to be entered onto the game board by a player;

second chance means for determining the number of movement steps to be traversed by a player's playing pieces during such player's turn; and

attack means for determining removal of opposing forces of playing pieces from said game board corresponding to an attacking player and a defending player.

4,385,766

MARBLE GAME ACTION TOY

Harlow B. Grow, 16530 Chattanooga Pl., Pacific Palisades, Calif. 90272

Filed Sep. 8, 1981, Ser. No. 299,712
Int. Cl.³ A63F *7/00*
U.S. Cl. 273—328 **3 Claims**

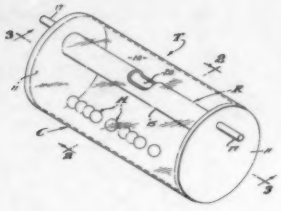
1. An action toy for the skillful collection of marbles contained therein, and including;

an elongated containment cylinder to be manually held and tipped end to end on its axis from a horizontal disposition and having a transparent cylinder wall for observation and with closed ends,

an elongated receiver of tubular cross section for the collection

of marbles and extending coextensively within the containment cylinder parallel to said axis thereof near to one side of the cylinder wall and having a transparent side wall,

coaxial trunnions fixed to and extending from opposite ends of the receiver and rotatably projecting through coaxial bearing openings eccentrically positioned in the closed ends of the containment cylinder and exposed for turning by manipulation whereby both the containment cylinder and the receiver depend by gravity from said trunnions,



a target opening through the said wall of the receiver intermediate the opposite ends thereof,

and a multiplicity of marbles loosely captured within the containment cylinder and adapted to be selectively thrown by movements skillfully applied and caught by the receiver through said target opening and collected therein for observation and for subsequent dumping by turning said trunnions.

4,385,767

MOVABLE TARGETS

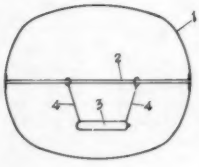
Robert Colbourne, Chichester, England, assignor to Easams Limited, Chelmsford, England

Filed Jun. 24, 1980, Ser. No. 162,624

Claims priority, application United Kingdom, Jul. 2, 1979, 7922925

Int. Cl.³ F41J *9/02*

U.S. Cl. 273—359 **1 Claim**



1. A movable three-dimensional gunnery target which is capable of rolling under the action of wind or gravity, comprising a substantially gas-tight envelope which is formed of flexible material and which is dilatable to a predetermined shape, an axle within said envelope, a bottle of compressed gas which is suspended from said axle, and means operable by remote control to dilate said envelope with compressed gas from said bottle.

4,385,768

SHAFT MOUNTING DEVICE AND METHOD

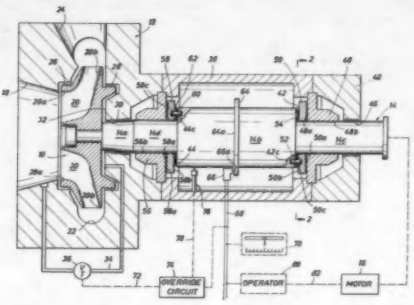
Judson S. Swearingen, Malibu, Calif., assignor to Rotoflow Corporation, Inc., Los Angeles, Calif.

Division of Ser. No. 58,859, Jul. 19, 1979, Pat. No. 4,287,758. This application Apr. 17, 1981, Ser. No. 255,242

Int. Cl.³ F16J *15/54*

U.S. Cl. 277—1 **1 Claim**

1. A method for protecting the seal on a rotating device having a housing, a shaft journaled in the housing and able to move axially relative thereto and a tapered seal having tapered sealing elements on the shaft and the housing, comprising the steps of sensing the speed of the shaft, forcing said shaft axially in a first direction to move the tapered sealing elements apart



when the shaft speed is below the operating range of the rotating device, and forcing said shaft in a second, opposite direction to move the tapered sealing elements together when the shaft speed is in the operating range.

4,385,769

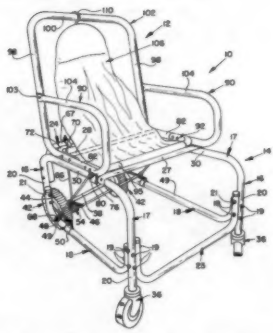
INVALID SUPPORT CHAIR STRUCTURE

Joseph L. Molino, 2 Aurora Dr., Valley Cottage, N.Y. 10989

Filed Dec. 16, 1980, Ser. No. 217,032

Int. Cl.³ A47C *5/10*; A61G *5/00*; B62B *9/08, 9/28*

U.S. Cl. 280—47.38 **12 Claims**



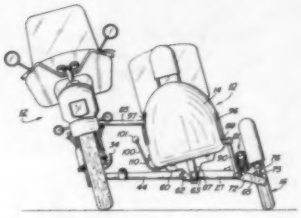
1. An invalid support chair having a frame of tubular construction with a pair of upright generally parallel side panels, each formed by a single tubular member, having respective lower side rail tubular sections at the bottom of the side panels, upper arm tubular sections extending generally upwardly and then rearwardly from the front ends of the lower side rail sections to form upper arms of the side panels, and rear generally upright tubular sections extending upwardly from the rear ends of the lower side rail sections and connected to the upper arm sections at the rear ends of the upper arms, an upper transverse back frame tubular section extending between the upright sections of the side panels to form an inverted generally U-shaped back frame therewith, and front and rear generally U-shaped lower tubular base sections at the bottom of the support chair having front and rear transverse tubular base sections respectively and inwardly projecting leg sections connected to the lower side rail sections of the side panels at the front and rear ends thereof respectively, and a sling seat connected between said front transverse tubular base section and said upper transverse back frame section.

4,385,770

MOTORCYCLE SIDECAR

Wallace F. Mitchell, Rte. 60 and St. Mary's Rd., Rte. #1 Box #37, P.O. Box 267, Libertyville, Ill. 60048

Filed Feb. 6, 1981, Ser. No. 231,988
Int. Cl.³ B62K *27/00*
U.S. Cl. 280—203 28 Claims



1. A sidecar for a motorcycle having a main frame, comprising in combination

a support frame,

a sidecar body pivotably mounted to said support frame to permit pivotal movement of said body relative to said frame about a fore and aft axis, and

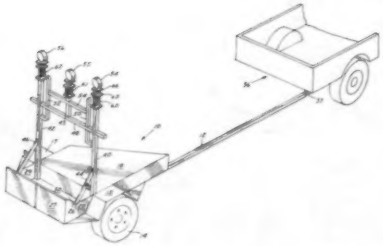
means mounting said support frame to said main frame to steer said support frame in response to a lean of said main frame.

4,385,771

ROADWORKERS SAFETY TRAILER

Robert Y. Eckels, P.O. Box 79088, Houston, Tex. 77079

Continuation of Ser. No. 34,150, Apr. 26, 1979, abandoned. This application Jul. 27, 1981, Ser. No. 286,859
Int. Cl.³ B60D *1/000*
U.S. Cl. 280—400 3 Claims



1. A safety service trailer for towing by a towing vehicle and providing a protected work area for a plurality of road workmen to protect them from flowing vehicular traffic during work operations in a roadway, comprising:

heavy duty trailer frame means of roadable width and having transverse axle means mounted centrally therebeneath, said frame means including a pair of generally parallel side members, one of said side members being substantially longer than the other, a rear member extending between the rear ends of said side members generally at a right angle thereto, and an angled front member extending from the front of said longer side member to the front of the shorter side member;

wheel means mounted on said axle means on the outside of said trailer means for mobility of the trailer, the overall length of said trailer frame means being approximately equel to the overall width of said trailer measured between the outer sides of said wheel means;

covering means on said trailer frame means and forming therewith a box frame body, said covering means being secured to said side, rear and angled front members, and the front edge of said box frame body being angled back from the front of said longer side member toward the wheel means located on the other side of said frame means whereby the load carrying space on said covering means is concentrated toward said longer side member;

an elongated, single stretch draught bar having a substantial portion of the inner end thereof received within said box frame body, said draught bar being disposed to lie against and being secured to said longer frame side member, the outer end of said draught bar having means on the forward end thereof for connecting said trailer to a towing vehicle, and said draught bar projecting forward from said front edge of said one side of said box frame body a distance approximately equal to from one to one and one-half times the overall width of said trailer measured between the outer sides of said wheel means, the juncture of said angled front edge of said box frame body with said draught bar defining a fulcrum,

the draught bar, said angled front edge of said box frame body, and the rear of a towing vehicle defining a clear protected working space for a plurality of workmen to do work on a roadway, said draught bar acting as a physical barrier to accidental movement of the workmen into the adjacent roadway, and said heavy duty trailer frame means, said box frame body, and said single stretch draught bar protecting the workers from the rear, and

said box frame body and said angled front edge thereof functioning when said trailer is connected with a towing vehicle to direct toward said fulcrum forces acting upon said body because of a vehicle impacting the rear thereof, whereby when excessive impact force occurs said draught bar will bend at said fulcrum and said body will serve to protect the workmen, said body also then functioning to deflect the impacting vehicle away from said workmen; and

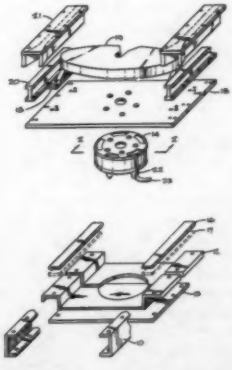
upright frame means mounted on said trailer frame means and carrying thereon warning devices for signaling the presence of said trailer to oncoming vehicular traffic.

4,385,772

METHOD OF RELEASABLY COUPLING ARTICULATED VEHICLES AND PREVENTING JACK-KNIFING

Patrick J. Mackey, 91-3 Woodridge Cir., Ottawa, Ontario, Canada (K2B 7T2)

Filed Oct. 8, 1980, Ser. No. 194,953
Claims priority, application Canada, Oct. 11, 1979, 337369
Int. Cl.³ B62D *53/08*
U.S. Cl. 280—432 12 Claims



1. A releasable coupling for articulated vehicles comprising:

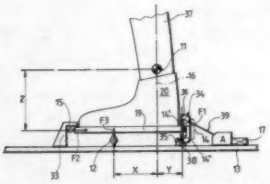
(a) a base means adapted for attachment to the rear frame of the tractor;
(b) a supporting means adapted for attachment to the rear frame of the tractor in an opposing relationship to said base means;
(c) a brake means having one part thereof attached to the said base means;
(d) a turntable attached to a second part of said brake means for rotation therewith, the turntable being adapted to be supported for rotation by bearing surfaces adapted to be attached to the rear frame of the tractor unit;
(e) a fifth wheel coupling and locating means attached to the said turntable;
(f) a king pin and locating means adapted to be attached to the underside of the front end of the trailer unit and arranged to mate with the fifth wheel, the locating means being attached to the turntable so that the trailer, the turntable and the second part of the brake means to which the turntable is attached rotate as a unit about a vertical axis when the tractor and trailer are coupled; and
(g) a brake means adapted to be connected to the braking system of the articulated vehicle so that when the braking system of the articulated vehicle is operated, rotation of the turntable and trailer with respect to the base means and tractor is prevented or inhibited.

4,385,773

SKI SAFETY BINDING

Georg Scheck, and Ralf Storandt, both of Leonberg, Fed. Rep. of Germany, assignors to Geze GmbH, Leonberg, Fed. Rep. of Germany

Filed Nov. 26, 1980, Ser. No. 210,616
Claims priority, application Fed. Rep. of Germany, Nov. 30, 1979, 2948277
Int. Cl.³ A63C *9/08*
U.S. Cl. 280—612 **29 Claims**



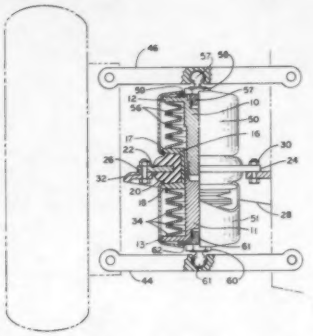
1. A ski safety binding adapted to determine the occurrence of a dangerous bending moment at a skier's leg about a transverse axis passing through substantially the weakest point of the skier's leg, said point being in the general vicinity of the uppermost portion of a ski boot secured via its sole to the ski by the binding, and for forming a release signal when said dangerous bending moment is approached, said safety binding comprising a ski boot securing system; actuating means for releasing said ski boot securing system in response to said release signal; a first measuring transducer arranged between the ski and the sole of the ski boot at a distance (Y) in the longitudinal direction of the ski behind the transverse axis for measuring a first force acting at said distance (Y) on the sole of the ski boot; a second measuring transducer arranged between the ski and the sole of the ski boot at a distance (Z) below said transverse axis and operative in the longitudinal direction of the ski to measure a second force acting in said direction on the sole of the ski boot; a third measuring transducer arranged between the ski and the sole of the ski boot at a distance (X) in the longitudinal direction of the ski in front of the transverse axis for measuring a third force acting at said distance (X) on the sole of the ski boot; and a processing circuit for receiving outputs from said first, second and third measuring transducers and for forming said release signal from the net moment of said first, second and third forces about said transverse axis.

4,385,774

HEAVY DUTY VEHICLE SUSPENSION SYSTEM

John C. Blake, 6193 Gerdts Dr., San Jose, Calif. 95135

Filed Mar. 20, 1981, Ser. No. 245,741
Int. Cl.³ B60G *7/02*
U.S. Cl. 280—663 **10 Claims**



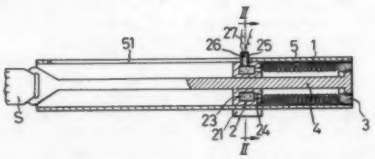
10. A system for absorbing the shocks and vibrations transmitted between the upper control arm, the lower control arm and the chassis of a vehicle comprising a rod pivotally connected at the upper end to the upper control arm and at the lower end to the lower control arm; means defining a first flange on said rod adjacent the upper end thereof and a second flange on said rod adjacent the lower end thereof; a sleeve slidable on said rod intermediate said first and second flanges, said sleeve having upper and lower spaced flanges; a rubber ring disposed between said upper and lower flanges and connected to the frame of the vehicle; said rod, said sleeve and said ring being disposed in an opening in the chassis of the vehicle; a first set of annular, stacked springs disposed between said first flange of said rod and said upper flange on said sleeve; and a second set of annular stacked springs disposed between said second flange of said rod and said lower flange on said sleeve.

4,385,775

SEAT BELT TENSIONING DEVICE FOR VEHICLE

Toshiaki Shimogawa; Satosi Kuwakado, both of Aichi; Noboru Tsuge, and Toshihiro Takei, both of Kariya, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Continuation-in-part of Ser. No. 20,045, Mar. 13, 1979, Pat. No. 4,232,886. This application Oct. 30, 1980, Ser. No. 202,435
Claims priority, application Japan, Nov. 10, 1979, 54-145833
Int. Cl.³ B60R *21/10*
U.S. Cl. 280—806 **14 Claims**



1. A seat belt tensioning device for a vehicle, comprising:
a fixed member adapted to be fixed to a vehicle body;
a movable member disposed so as to be moved in a direction away from said fixed member;
an elongatable flexible member which is usually in a contracted state, opposite ends of which are secured to said fixed member and said movable member respectively to form a sealed chamber therebetween;

a connecting member, one end of which is engaged with said movable member so as to move therewith, and the other end of which is connectable to a selt belt;

a guide member for guiding the elongation of said flexible member therealong; said guide member being disposed along said flexible member, one end of said guide member being fixed to said movable member, said guide member being slidable relative to said fixed member together with said movable member; and

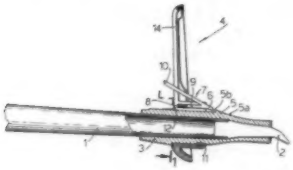
gas supplying means for supplying high pressure gas into said sealed chamber to elongate said flexible member at an urgent time.

4,385,776

SKI STICKS PROVIDED WITH INTERCHANGEABLE WHEELS

Attilio Pronzati, Via Mazzini, 16, 20010 Vanzago (Milano), Italy

Filed Feb. 24, 1981, Ser. No. 237,738
Claims priority, application Italy, Feb. 29, 1980, 20275 A/80
Int. Cl.³ A63C *11/24*
U.S. Cl. 280—824 **3 Claims**



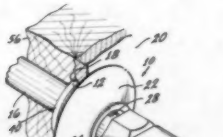
1. A long distance ski stick comprising a rod and a wheel having disengageable mutual fastening means, said fastening means comprising an abutment on the rod, and a trigger-type releasable latch on the wheel that is urged toward the rod and that slides over the abutment when the rod is inserted through the wheel and that snaps behind the abutment to retain the wheel on the rod until the latch is released, the latch comprising a lever integral with the wheel, said lever having a first free end engaging the said abutment and a second free end on which the user presses to release the latch.

4,385,777

DECORATIVE ESCUTCHEON CAPABLE OF INHIBITING THE PROPAGATION OF NOISE

Daniel D. Logsdon, Fullerton, Calif., assignor to The Logsdon Foundation, Stanton, Calif.

Filed Jun. 2, 1980, Ser. No. 155,423
Int. Cl.³ F16L *41/00*
U.S. Cl. 285—12 **14 Claims**



1. An escutcheon component system including an escutcheon to be placed around a pipe wherein the pipe projects through a hole in the wall, said escutcheon components system being capable of suppressing the propagation of noise from the pipe to the wall and decoratively covering the hole in the wall which comprises:

an escutcheon plate, said escutcheon plate having a front side and a back side, at least the periphery of the back side lying in a flat plane and capable of being placed in an abutting alignment with said wall;

said escutcheon plate including a hole extending from the front side to the back side, said hole sized to be larger than the diameter of said pipe such that said pipe is capable of passing through said hole;

said escutcheon plate including a tube integrally formed with said plate and extending outwardly from said back side of said escutcheon plate and located co-cylindrically with said hole in said escutcheon plate and being adapted to be positioned in the hole in the wall, the inside diameter of said tube being slightly greater than the diameter of said hole in said escutcheon plate, the portion of the back side of said escutcheon plate located between the inside diameter of said tube and the periphery of said hole in said escutcheon plate forming an annular lip on said escutcheon plate within the interior of said tube;

a generally cylindrically shaped insert having an outside generally cylindrical surface, said insert formed of a flexible material such that said insert is deformable under compression, said insert including a cylindrically shaped opening extending completely through said insert along the longitudinal axis of said insert, said opening sized to be approximately equal to the size of the outside diameter of said pipe;

the outside diameter of said generally cylindrical insert being slightly larger than the inside diameter of said tube, said insert capable of fitting inside said tube and being positioned in said tube with one end of said insert abutting against said lip by compressing said flexible material of said insert inwardly toward said opening to reduce both the outside diameter of said insert and the diameter of said opening in said insert and when so reduced in diameter the opening of said insert capable of frictionally engaging about the outside surface of said pipe and when so compressed said insert capable of being frictionally retained within said tube,

gripping means positioned on the outer surface of said cylindrical insert, said gripping means assisting in said frictional retention of said insert within said tube,

retaining means operatively associated with said escutcheon plate and said insert and capable of mechanically restraining movement of said insert from within said tube once said insert has been inserted into said tube,

said cylindrical insert having at least one ridge extending circumferentially around said outside cylindrical surface of said insert, said ridge integrally formed with said insert of said flexible material such that said ridge is capable of being deformed inwardly by flexure of said flexible material under compression.

4,385,778

DEVICE FOR COMPENSATION OF THE MOVEMENT OF THE PIPELINES WHICH SUPPLY TWO GASEOUS AGENTS INTO AN INDUSTRIAL REVOLVING APPLIANCE

Zbigniew Pstras, and Stanislaw Kuczera, both of Katowice, Poland, assignors to Biuro Projectow Przemyslu Metali Niezelaznych "BIPROMET", Katowice, Poland

Continuation of Ser. No. 108,982, Jan. 2, 1980. This application Oct. 6, 1981, Ser. No. 309,312
Claims priority, application Poland, Jan. 12, 1979, 212793
Int. Cl.³ F16L *39/04*
U.S. Cl. 285—134 **2 Claims**

1. An assembly for permitting relative rotatable and linear movement of a revolving appliance including separate coaxial inner and outer pipelines rotatable relative to fixed inner and outer coaxial pipelines for supplying two separate gaseous

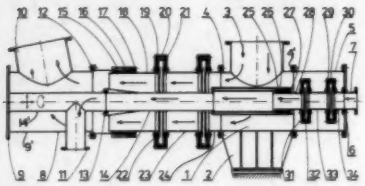
agents from said fixed inner and outer pipelines to said revolving appliance which comprises:

a first fixed connector secured to said outer fixed pipeline in axial alignment therewith,

a first packing body fixed to said outer pipeline of said revolving appliance and extending along said first fixed connector,

a first sealant between said fixed connector and said first packing body,

a first gland for pressing said sealant into engagement with said first fixed connector and said first packing body,



a second fixed connector secured to said inner fixed pipeline in axial alignment therewith,

a second packing body fixed to said inner pipeline of said revolving appliance and extending along said second fixed connector,

a second sealant between said second fixed connector and said second packing body, and

a second gland for pressing said second sealant into engagement with said second fixed connector and said second packing body.

4,385,779

CONNECTION STRUCTURE FOR VEHICLE BODY PARTS

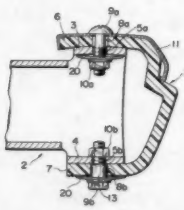
Toshimitsu Kimura, Fujisawa, and Tetsuo Shimizu, Yokohama, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Oct. 16, 1980, Ser. No. 197,728

Claims priority, application Japan, Oct. 20, 1979, 54-145642[U]

Int. Cl.³ B60R *19/02*

U.S. Cl. 293—102 **7 Claims**



1. A bumper mounting assembly comprising:

a metal bumper support having a first through hole therein;

an elastomeric member disposed on said support, said elastomeric member have a second through hole which overlays said first through hole, said first and second through holes having different cross sectional areas;

a fastener disposed through said first and second through holes for securing said elastomeric member to said support; and

a deformable resilient member associated with said fastener for applying a surface pressure to said elastomeric member which surface pressure biases said elastomeric member against said support, said surface pressure remaining within a predetermined range irrespective of the expansion of said elastomeric member within a predetermined range.

4,385,780

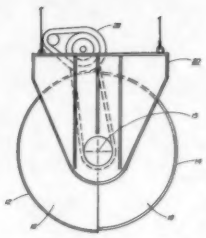
CYLINDRICAL HOIST BUCKET FOR FREE FLOWING GRANULAR MATERIAL

Robert J. Grush, P.O. Box 7528, Metairie, La. 70002

Filed Jan. 22, 1981, Ser. No. 227,436

Int. Cl.³ B66C *3/00*

U.S. Cl. 294—70 **2 Claims**



1. A cylindrical hoist bucket, for use with cranes and traveling gantries to move free-flowing granular material, comprises:

(a) suspensive structure means having a flat upper frame for attaching to cranes and gantries, and having opposing ends depending from said flat frame and tapering to define aligned holes in the respective lower extremities of said opposing ends;

(b) respective pivot pins fixed in each of said aligned holes defined in said depending ends;

(c) a pair of nested inner and outer half cylinders, having closed ends and a common concentric axis passing thru said closed ends, said closed ends being connected by and mounted in said suspensive structure on said pivot pins, and said half cylinders being adapted for each to pivot 90 degrees around said concentric axis and said pivot pins to form a closed cylindrical hoist bucket, and to pivot oppositely 90 degrees back to an open cylindrical hoist bucket;

(d) driven sheaves respectively fixed to an opposite closed end of each of said half cylinders, said sheaves being adapted to pivot with the associated half cylinder; and

(e) drive sheaves and driving means mounted on said flat frame and adapted to respectively pivot said driven sheaves and associated half cylinders fixed thereto.

4,385,781

CARRIER FOR PRINTED CIRCUIT BOARDS

John H. Welsch, Moscow, and Robert J. Carver, Nanticoke, both of Pa., assignors to Metropolitan Wire Corporation, Wilkes-Barre, Pa.

Filed Feb. 20, 1981, Ser. No. 236,615

Int. Cl.³ B25H *3/04*

U.S. Cl. 294—161 **16 Claims**

1. A carrier for printed circuit boards, comprising:

a pair of variably spaced apart opposing panels, each of said panels being of substantially rectangular configuration;

a plurality of spaced apart elongated guides provided on each panel, correspondingly opposed ones of said guides receiving opposing edges of a circuit board to support the circuit board in substantially perpendicular relationship between the panels;

a pair of skeletal frames, each of said frames being of substantially rectangular configuration, said frames being disposed on opposite ends of said panels to provide a substantially rectangular unit;

each of said frames including a spaced apart pair of elongated guide rails disposed at each of the opposing sides of

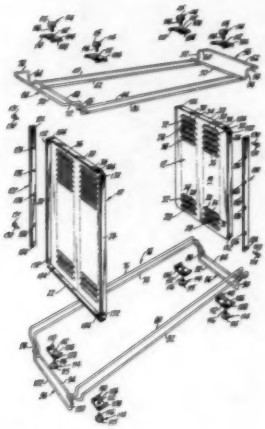
the frame, all four guide rails of each frame lying in a common plane;

coupling means for adjustably securing corresponding ends of each of said panels, respectively, to said frames for permitting adjustment of the spacing between said panels;

said coupling means including threaded openings in opposing ends of said panels, and threaded connecting means riding between each pair of guide rails and being received in said threaded openings for retaining said panels secured to said guide rails at a selected position;

integral support means extending from opposing ends of each of said frames for accommodating varied types of support for the carrier;

said support means interconnecting opposing ends of said pairs of guide rails to complete the rectangular configuration of each frame;



said support means permitting one carrier to be interlockingly fitted with respect to another carrier in a stacked relationship;

one of said frames defining an upper frame having its support means including a laterally outwardly extending U-shaped handle bar at each opposing end, and the other of said frames defining a lower frame having its support means including a downwardly extending U-shaped foot at each opposing end with legs of the U-shaped foot being inwardly directed from the sides of the lower frame;

said pairs of guide rails on said upper and lower frames being aligned with each other; and

said support means including a tie rod lying on and interconnecting the legs of each U-shaped handle bar and each U-shaped foot, whereby in the stacked relationship, each foot tie rod abuts a respective handle bar tie rod to spacedly stack one carrier onto the next carrier in vertical relationship.

4,385,782

FOLDING SEAT STRUCTURE

Alexander B. Clark, Jr., Box 2012, Hendersonville, N.C. 28793

Continuation of Ser. No. 584,481, Jun. 6, 1975, abandoned, and a continuation-in-part of Ser. No. 490,766, Jul. 22, 1974, abandoned. This application Jul. 15, 1977, Ser. No. 816,022

Int. Cl.³ A47C 7/02

U.S. Cl. 297—230 **3 Claims**

1. A folding cardboard seat structure including:

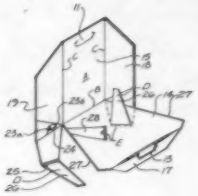
an elongated substantially rectangular blank having longitudinal fluting,

a transverse score in said blank forming a seat portion and a back portion,

spaced substantially longitudinal, marginal scores in said back portion extending from said transverse score defining marginal back flaps extending outwardly from said back portion,

a marginal, downwardly extending flap hinged adjacent a lower edge of each of said marginal back flaps and being severed from said seat portion and extending on each side of said seat portion along inclined lines extending from forward portions of said seat portion on each side thereof and tapering inwardly rearwardly toward said transverse score and said marginal scores in said back portion,

said transverse score including opposed downwardly inclined terminal portions from which said marginal downwardly extending flaps are hinged,



a pair of inwardly converging elongated slots carried in said seat portion for receiving respective downwardly extending flaps,

means for locking a forward free end of each of said downwardly extending flaps when folded against the seat portion positioning the back in upright position, and

said marginal back flaps diverging from said back portion in open position at such an angle that said opposed downwardly inclined terminal portions of said transverse score are in alignment with said lines extending from forward portions of said seat portion,

whereby the back of an occupant of the seat is supported in the area adjacent said marginal back flaps.

4,385,783

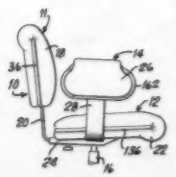
UPHOLSTERED FURNITURE ELEMENT

William I. Stephens, Emmaus, Pa., assignor to Knoll International, Inc., New York, N.Y.

Filed May 11, 1979, Ser. No. 38,123

Int. Cl.³ A47C 7/00

U.S. Cl. 297—455 **30 Claims**



1. An upholstered furniture element comprising at least two panels each having edges including a first end edge and inner and outer major surfaces, said two panels being disposed in assembled position with their first end edges in closely adjacent, generally parallel relation for angular movement relative to each other about an axis intermediate and generally parallel to their first end edges between an open position in which their inner surfaces face generally in the same direction and said assembled position in which their inner surfaces are in facing

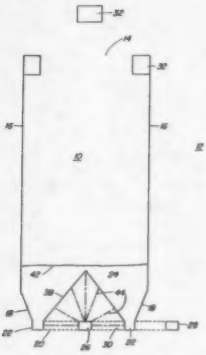
relation to each other; (b) a flexible body of upholstery extending over the outer surfaces of said two panels and bridging their first end edges, said body having a web margin with portions respectively extending around edges of said two panels and secured in overlying relation to the inner surfaces of said two panels such that when said two panels are in assembled position the aforesaid margin portions are concealed; and (c) means for fastening said two panels together in said assembled position, wherein at least one of said two panels has a side edge, said element further including at least one trim member, extending at least along said inner edge of said one panel and secured to the inner surface of said one panel and projecting laterally beyond said side edge so as to be visible, and to conceal the juncture between said two panels, when said two panels are in said assembled position.

4,385,784

METHOD FOR FORMING AN IN SITU OIL SHALE RETORT

Rudolph Kvapil, Golden, Colo., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Oct. 27, 1980, Ser. No. 200,639
Int. Cl.³ E21C *41/10*
U.S. Cl. 299—2 **37 Claims**



1. A method of recovering liquid and gaseous products from an in situ oil shale retort formed in a retort site in a subterranean formation containing oil shale, such as in situ oil shale retort containing a fragmented permeable mass of formation particles containing oil shale, the method comprising the steps of:

a. mining at least two horizontally extending, substantially parallel excavation drifts through the retort site, the drifts having a longitudinal dimension extending along the length of the drift and a lateral dimension extending across the drift;

b. mining at least one intermediate drift through the retort site, the intermediate drift being substantially in the same plane as and substantially parallel to the excavation drifts;

c. mining a vertical slot upwardly from the upper boundary of each of the excavation drifts into the unfragmented formation above said excavation drifts, the upper end of each of the vertical slots having a larger lateral dimension than the lateral dimension of the upper boundary of the drift from which the slot was mined;

d. drilling a first set of shot holes from the excavation drifts upwardly into a first portion of the unfragmented formation above the drifts;

e. placing explosive in the shot holes and detonating the explosive to explosively expand the first portion of unfragmented formation adjacent to the first set of shot holes downwardly into the adjacent excavation drifts;

f. repeating steps (d) through (f) of drilling a set of shot holes from the excavation drifts upwardly into a portion of the unfragmented formation above the drifts, placing explosive in the shot holes, detonating the explosive and removing rubble formed thereby from the excavation drifts along the length of the excavation drifts retreating from the vertical slot to the opposite boundary of the retort site remote from the vertical slot thereby forming a vertically extending void space above each of the excavation drifts;

g. drilling a second set of shot holes into the remaining unfragmented formation in the retort site, placing explosive in the second set of shot holes and detonating the explosive to explosively expand the unfragmented formation and distribute the volume of the void excavated in steps (a) through (g) in the resultant fragmented mass;

h. establishing a retorting zone within the fragmented mass at one end thereof and advancing the retorting zone through the fragmented mass toward the other end thereof for producing liquid and gaseous products of retorting; and,

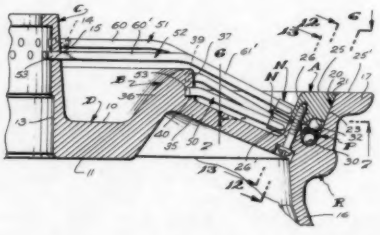
i. withdrawing the liquid and gaseous products of retorting from the other end of the fragmented mass.

4,385,785

VEHICLE WHEEL STRUCTURE

Curtis Norris, 15905 Manufacturers St., Huntington Beach, Calif. 92649, and Delmer D. Scott, Montecito, Calif., assignors to Curtis Norris, Huntington Beach, Calif.

Filed Apr. 24, 1981, Ser. No. 257,189
Int. Cl.³ B60B *7/04, 7/06*
U.S. Cl. 301—37 SS **13 Claims**



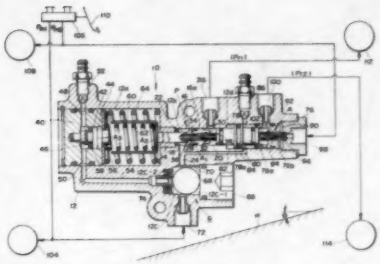
1. A vehicle wheel with front and rear ends including an elongate axially extending cylindrical rim with a radially inwardly disposed inner surface, axially spaced radially outwardly projecting front and rear tire bead engaging flanges, a forwardly and radially inwardly opening recess and a plurality of circumferentially spaced forwardly opening elongate substantially radially extending spoke seats opening forward into the recess and radially inward into the space inward of the rim, an annular clamp ring removably positioned in the recess and including a plurality of circumferentially spaced rearwardly opening spoke seats circumferentially offset from the forwardly opening spoke seats and opening rearwardly into the recess and radially inwardly into the space inward of the rim, a central wheel mounting disc concentric with and spaced radially inward of the rim, an annular radially extending spider between the disc and the rim, said disc and spider have portions with substantially radially outwardly disposed annular surfaces with circumferentially spaced radially outwardly opening spoke openings, each related to a spoke seat, and an annular series of elongate spokes with inner and outer ends, each spoke has an inner end portion engaged in a related spoke opening and an outer end engaged in a related spoke seat; and a plurality of circumferentially spaced substantially axially extending screw fasteners engaged in and between the rim and the clamp ring and releasably holding the clamp ring in the recess with the spokes held tight therebetween.

4,385,786

HYDRAULIC PRESSURE CONTROL VALVE FOR A DOUBLE PIPING BRAKING SYSTEM

Hitoshi Kubota, Fujisawa, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Oct. 30, 1980, Ser. No. 202,278
Int. Cl.³ B60T 8/26
U.S. Cl. 303—6 C 4 Claims



1. A hydraulic pressure control valve assembly for a double piping braking system of a wheeled vehicle, comprising:

a first proportioning valve (P) having a plunger (16) moving axially against a spring (62) in response to the application of a hydraulic pressure to a first fluid inlet port (72) to control the magnitude of hydraulic pressure at a first fluid outlet port (26), said first plunger (16) having a first poppet valve (32) opening and closing a passage between said first inlet port (72) and said first outlet port (26);

a second proportioning valve (A) having a second poppet valve (94) opening and closing a passage between a second fluid inlet port (98) and a second fluid outlet port (100);

a free-piston (78) having two axial ends, said free piston axially movably disposed between said first and second proportioning valves (P, A) to provide said valves with synchronous opening and closing operations, thereby allowing said second proportioning valve (A) to control the magnitude of hydraulic pressure at said second fluid outlet port (100) in response to the application of hydraulic pressure to said second fluid inlet port (98); and

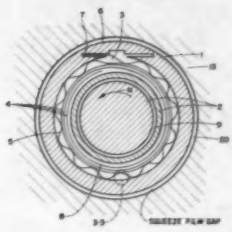
a fail-safe means (98, 20, 82, 80, 76*a*) constructed and arranged to move said free-piston (78) to a position to open one of said first and second poppet valves (32, 94) upon the failure of operation of the braking system associated with the other of said poppet valves, said fail-safe means including a first chamber section (20) to which said free-piston first axial end is exposed, and with which said first fluid outlet port (26) communicates, a second chamber section (76*a*) to which said free-piston second axial end is exposed, and with which said second fluid outlet port (100) communicates, a third chamber section (82) to which one face of a land (78*a*) formed on said free-piston (78) is exposed, and a fourth chamber section (80) to which the opposite face of said land (78*a*) is exposed, said fourth chamber section (80) communicating with said first fluid inlet port (72), said third chamber section (82) being located between said first and fourth chamber sections (20, 80), and said fourth chamber section (80) being located between said third and second chamber sections (82, 76*a*).

4,385,787

RADIAL BEARING FOR HIGH-SPEED TURBOMACHINERY

Karl-Ullrich Reisenweber, Unterschleissheim, and Franz Grafenegger, Dachau, both of Fed. Rep. of Germany, assignors to MTU Motoren-und Turbinen-Union Munchen GmbH, Fed. Rep. of Germany

Filed Aug. 25, 1980, Ser. No. 180,585
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1979, 2934271
Int. Cl.³ F16C 32/06
U.S. Cl. 384—114 3 Claims



1. An aerodynamic radial bearing for high speed turbomachinery, wherein within an annular space (3) between an outer bearing sleeve (1) and a bearing journal (2) there is positioned a single piece spirally shaped foil, a first portion (4) of which is formed as a smooth web encompassing said bearing journal (2) to provide bearing damping, and a second portion (5) of which is integrally attached to said first portion and extends outwardly along the bearing circumference and has an undulating shape which determines the rigidity of the bearing, and furthermore has one end (6) fastened to the inner wall side of said bearing sleeve, characterized by:

a. said second foil portion (5) having a substantially uniform undulating shape, in a preformed web, extending around the entire bearing circumference;

b. said uniform undulating shape of said second foil portion presenting a plurality of uniform, smoothly rounded exterior curves against the circumferential wall of said bearing race (1), and a plurality of uniform, smoothly rounded interior curves against said first smooth foil portion (4);

c. said first foil portion (4) being wound a plurality of times around said bearing journal (2);

d. one end (6) of said second foil portion (5) being positioned and held fixed within a tangential slot (7) of said bearing sleeve (1);

e. a hardened coating being provided on the entire section of said first foil portion (4) immediately adjoining said bearing journal, as well as on the corresponding entire circumferential section of said bearing journal (2); and

f. a bore in the bearing housing (13) and the adjoining outer circumferential wall of said bearing sleeve (1) forming an annular space (20) to provide additional lubricating film damping.

4,385,788

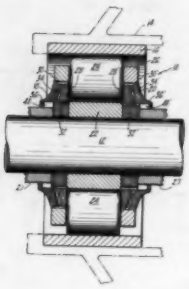
ROLLER BEARING AND CONSTRUCTION THEREOF

Paul F. Brown, Jr., Bolton; Louis J. Dobek, Somers, and Richard M. Slayton, South Windsor, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 26, 1981, Ser. No. 277,491
Int. Cl.³ F16C 33/66
U.S. Cl. 308—187 2 Claims

1. A roller bearing for high speed rotor having an inner ring means providing the inner race, an outer ring means providing the outer race and a plurality of cylindrical rollers circumferentially spaced between said inner ring means and said outer ring means, said inner ring means comprising a center ring

section sandwiched between two axially spaced outer ring sections, the center ring section being fabricated from a higher strength material relative to the two axially spaced outer ring sections, the axially spaced outer ring sections being fabricated from a more ductile material relative to the center section and means for urging said two outer ring sections and the center ring section to shoulder the adjacent section, lubricating and cooling passages solely in said outer ring sections for leading lubricant internally of said roller bearing each of said outer



ring sections carrying an axially exending portion extending in a direction remote from said cylindrical rollers and spaced from said urging means for defining an annular recess, lip means depending radially inwardly toward said urging means but spaced therefrom for defining an inlet for admitting lubricant to said recess, and said lubricating and cooling passages includes a plurality of horizontally extending passages for leading libricant into the inner race provided by said center ring section.

4,385,789

SEALED ROLLER BEARINGS

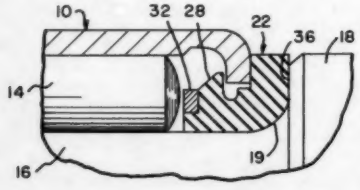
Robert S. Batt, Barby, near Rugby, England, assignor to The Torrington Company Limited, Conventry, England

Filed Mar. 12, 1981, Ser. No. 243,165

Claims priority, application United Kingdom, Mar. 19, 1980, 8009213

Int. Cl.³ F16C *33/78*

U.S. Cl. 308—187.1 **8 Claims**



1. A sealed roller bearing comprising a bearing shell adapted to receive a shaft and having an in-turned end lip encircling one open end thereof, rollers disposed between the bearing shell and the shaft, and a seal at the open end of the bearing shell, the seal being an annular elastomeric body member of which the outer peripheral surface has an annular groove with a bottom surface portion parallel to the inside diameter surface of the in-turned end lip intermediate the axial inner and outer end portions of the said body member for receiving the axial end lip of the bearing shell, said annular groove also having a radially deeper annular void portion to facilitate flexure of the said axially inner end of the body member and of which the axial inner end portion, intended to penetrate into said bearing shell, is of inwardly-tapering shape to facilitate passage of said body member end past said lip as the seal is snapped onto the lip.

4,385,790

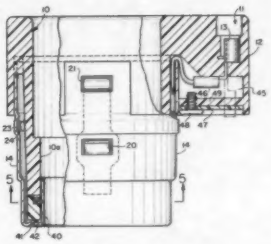
VACUUM CLEANER HOSE END ADAPTER

Joseph Genoa, Freeport, N.Y., assignor to Atlantic Vacuum Parts Corp., Long Beach, N.Y.

Filed Oct. 1, 1980, Ser. No. 193,179

Int. Cl.³ H01R *4/64*

U.S. Cl. 339—16 R **5 Claims**



1. A vacuum cleaner hose end adapter for use with a vacuum cleaner having an electrified vacuum cleaner hose receptacle with electrical contacts therein, said adapter comprising:

a generally cylindrical housing which is substantially shorter than a hose of the vacuum cleaner, said housing having means at one end thereof for being received in and lockingly engaging the electrified vacuum cleaner hose receptacle, and means at the other end thereof for engaging a vacuum cleaner hose, said housing communicating suction developed in the vacuum cleaner to the hose engaged with said other end of said housing;

means at said other end of said housing defining a first electrical connector for receiving a mating electrical connector on a vacuum cleaner hose for supplying electrical energy to said mating electrical connector;

said housing comprising a double-walled generally cylindrical member having inner and outer walls, each of which is generally cylindrical and which are spaced from each other over at least a portion thereof;

a pair of electrical contact members at said one end of said housing, said pair of electrical contact members projecting outwardly of said outer wall of said housing at diametrically opposed side wall portions of said housing and being electrically insulated from said housing, and said electrical contact members being located so as to be received inside said vacuum cleaner hose receptacle when said one end of said housing is received in said hose receptacle to electrically contact mating electrical contacts within said vacuum cleaner hose receptacle;

at least one passage in said housing between said inner and outer walls thereof and extending from said electrical contact members to said first electrical connector, said inner wall of said housing preventing communication between said at least one passage and the interior of said generally cylindrical housing; and

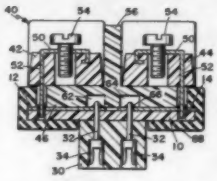
electrical conductors running within said at least one passage in said housing and electrically connecting the respective electrical contact members with said first electrical connector;

whereby electrical energy is supplied from a vacuum cleaner to said first electrical connector via said electrical contact members and said electrical conductors when said housing is received in said hose receptacle of the vacuum cleaner.

4,385,791
ELECTRICAL ADAPTOR BLOCK

Rodger T. Lovrenich, Santa Teresa, N. Mex., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Feb. 27, 1981, Ser. No. 238,691
Int. Cl.³ H01R 9/09
U.S. Cl. 339—17 C 3 Claims



1. Adaptor block means for electrically interconnecting wire connection means to printed circuit board connector receptacle means, comprising:

single-sided printed circuit board means having two sets of inner connection pad means positioned toward the center of the board and two sets of outer connection pad means positioned one outward from each set of said inner connection pad means toward the outer edge of said printed circuit board means, each one of said inner connection pad means being connected to one of said outer connection pad means by an electrically conductive path;

positioning block means of insulating material positioned on the same side of said printed circuit board means as said electrically conductive paths and having a base with an upwardly extending separator which forms two platforms for seating terminal strip means, said base having passage means in the bottom thereof overlying said inner connection pad means in said printed circuit board means;

a pair of terminal strip means for receiving wire connections, one terminal strip means seated on each of said platforms on said positioning block means, each of said terminal strip means having a plurality of pins protruding downwardly near one side thereof, each pin extending past the side of said platform upon which said terminal strip means is seated into one of said outer connection pad means and soldered thereto; and

printed circuit board connector receptacle means positioned on the opposite side of said printed circuit board means from said positioning block means for receiving electrical connector means and having two sets of upwardly extending pins, each of said pins extending into said passage means in the bottom of said positioning block means and soldered to one of said inner connection pads.

4,385,792
PROTECTIVE COVER FOR ELECTRICAL CONNECTOR RECEPTACLE OPEN END, PROVIDING RFI/EMI SHIELDING

Robert Baur, Los Angeles, and Ralph T. Iversen, Granada Hills, both of Calif., assignors to Automation Industries, Inc., Greenwich, Conn.

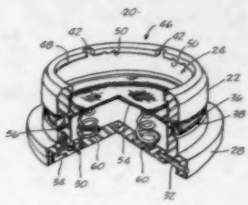
Filed Jul. 3, 1980, Ser. No. 165,722
Int. Cl.³ H01R 13/44
U.S. Cl. 339—36 10 Claims

1. A cover for a cylindrical electrical connector receptacle open end, comprising:

a barrel having indexing means at an open end thereof for unique alignment with the receptacle open end;

means for retainment of said barrel at said receptacle open end including spring means for applying pressure to said receptacle open end to maintain retainment and to lock the cover to the receptacle open end;

a disc movably located within the barrel and contacting said spring means which resiliently urges said disc against the receptacle open end;



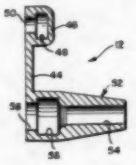
means carried by said barrel for controlling the travel of said disc; and

plate means for closing the other end of said barrel.

4,385,793
MEDICAL TERMINAL CLIP WITH ANTI-TANGLE DEVICE

Stuart K. Koford, Bartlett; John C. Colwell, Hoffman Estates, both of Ill., and Alexander D. Simon, Van Nuys, Calif., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed May 11, 1981, Ser. No. 262,666
Int. Cl.³ H01R 11/22
U.S. Cl. 339—61 R 11 Claims



1. A medical terminal clip for use with instruments such as medical monitoring instruments, or the like, comprising:

a terminal body member having first and second generally side-by-side arms movable toward and away from each other for opening and closing the clip, said first arm having a lead wire extending from a free end thereof; and

an anti-tangle device extending between the free ends of said arms and of sufficient length to permit said toward and away movement of the arms, including complementary engaging means between the free ends of said arms and the anti-tangle device to releasably lock the device to the arms.

4,385,794
INSULATION DISPLACEMENT TERMINAL

John E. Lucius, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 927,720, Jul. 25, 1978, abandoned. This application Feb. 24, 1982, Ser. No. 351,725
Int. Cl.³ H01R 13/38
U.S. Cl. 339—97 R 10 Claims

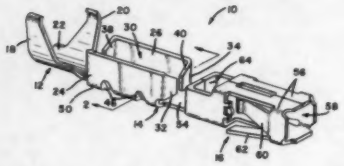
1. An electrical terminal for effecting insulation displacing termination of an electrical wire formed by a conductor covered with insulation, said terminal comprising:

a forward mating portion having a profile adapted to engage another electrical terminal;

a rearward wire engaging portion integral with said forward mating portion, said rearward wire engaging portion comprising an elongate base portion and first and second elongate beam members connected to opposite sides of

said base by respective bights, said beam members being substantially parallel and spaced apart a distance slightly greater than the diameter of said wire to define a wire receiving channel therebetween, at least one indent means formed in each said beam member through said bight and into the adjacent base portion to extend into said wire receiving channel to increase the rigidity of said wire engaging portion;

each of said beam members having at least one insulation piercing extension directed into said wire receiving channel toward a corresponding insulation piercing extension



of the other of said beam members, with each of said insulation piercing extensions being substantially perpendicular to its respective beam member, and each of said insulation piercing extensions having an edge portion; said edge portion of said one insulation piercing extension being spaced from said edge portion of said corresponding insulation piercing extension a distance slightly less than the diameter of said conductor, and said edge portions piercing through said insulation of said wire to establish electrical and mechanical engagement therewith as said wire is moved laterally of its axis between said beam members and into said wire receiving channel.

4,385,795

CONNECTOR FOR FLAT CABLE

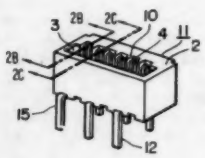
Seiji Endoh; Shotaro Tada; Toru Kuga; Yasuo Takeda, all of Kanuma; Kazuo Mitsui, and Yoji Yoshimura, both of Kawasaki, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Dec. 10, 1980, Ser. No. 214,907

Claims priority, application Japan, Dec. 28, 1979, 54-172112

Int. Cl.³ H01R *4/48*

U.S. Cl. 339—176 MF **3 Claims**



1. A horizontal connector adapted to be detachably connected to a flat electric cable comprising: a housing having a cable insertion hole formed therein; and terminal members having ends disposed in said cable insertion hole, said terminal members having legs opposite said ends, said legs extending from said cable insertion hole along a single line, a first group of said legs being bent substantially 90° at a point outside said cable insertion hole so as to extend in a direction perpendicular to the axial direction of said connector, a second group of said legs alternating with said legs of said first group being bent at a position closer to a center of said housing than said legs of said first group at an angle greater than 90°, said second group of said legs being bent a second time at a position near an outer surface of said housing so that end portions of said second group of said legs extend in a direction substantially parallel to end portions of said first group of said legs, said end portions of said legs being staggered alternatively in a zigzag manner in two parallel lines, said legs being of equal length before being bent and said legs being bent such that said end portions of all of said legs are substantially in a common plane.

4,385,796

BATTERY TERMINAL POST CLAMP

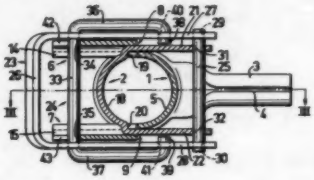
Lars Eriksson, Djurgardsvägen 15, S-633 40 Eskilstuna, Sweden

Filed Oct. 7, 1980, Ser. No. 195,218

Claims priority, application Sweden, Oct. 12, 1979, 7908486

Int. Cl.³ H01R *11/02*

U.S. Cl. 339—238 **11 Claims**



1. Battery terminal post clamp with a quick-coupling device for connection to a battery post comprising a first part and a second part which are moveable in relation to each other and have portions facing each other, said portions being formed substantially in correspondence with the shape of the battery terminal post and arranged to together substantially clasp the battery terminal post in an operating position, control means which upon actuation brings the parts towards or away from each other comprising a toggle joint mechanism connected to the parts having a dead-point position in the position where said portions of the parts are located closest to each other, wherein the parts are substantially U-shaped with a bottom portion and parallel legs extending from said bottom portion, the legs of said first part in the transition areas from its bottom portion having openings through which the legs of the second part extend.

4,385,797

LIGHT-EMITTING DEVICE COUPLED TO AN OPTICAL FIBRE

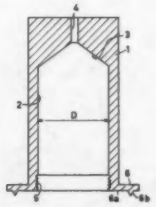
Jean-Claude Dubois, and Gerard Mourgues, both of Caen, France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 18, 1980, Ser. No. 160,704

Claims priority, application France, Jun. 20, 1979, 79 15841

Int. Cl.³ G02B *5/14*

U.S. Cl. 350—96.2 **9 Claims**



1. A device for coupling an end of an optical fiber to a light source, said coupling device comprising:

a sleeve having a cavity with first and second ends, the first end having a conical shape widening toward the second end;

a movable end fitting, slideably arranged in the second end of the cavity, said end fitting having a conical recess widening toward the first end of the cavity;

a first flexible ring having a conical portion substantially the same shape as the first end of the cavity, said first ring being arranged in the cavity with its conical portion adjacent the first end of the cavity;

a second flexible ring having a conical portion substantially the same shape as the conical recess in the end fitting, said second ring being arranged in the cavity with its conical portion adjacent the conical recess in the end fitting;

a rigid bushing, arranged in the cavity between the flexible rings; and

a clamping ring arranged in the cavity adjacent to the movable end fitting so as to press the movable end fitting toward the first end of the cavity;

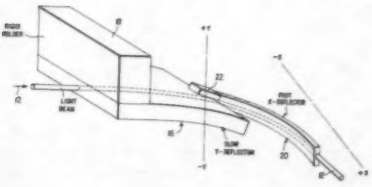
said sleeve, end fitting, rings, and bushing defining an axial passage for directly accommodating the end of the optical fiber, the flexible rings immobilizing the end of the fiber when they are compressed between the sleeve and the clamping ring.

4,385,798

PIEZOELECTRIC LIGHT BEAM DEFLECTOR

George J. Yevick, 536 Nordhoff Dr., Leonia, N.J. 07605

Filed Sep. 16, 1980, Ser. No. 187,737
Int. Cl.³ G02B 5/14
U.S. Cl. 350—96.14 12 Claims



1. An optical device for deflecting a beam of light, the device including a flexing piezoelectric sheet element of known construction having associated electrodes and interdigitated fingers attached to the sheet, the electrodes and fingers positioned both on the top and bottom opposite surfaces of the piezoelectric sheet, the improvement comprising, the sheet element being optically coated over its opposite top and bottom surfaces so as to totally internally conduct a beam of light entering the sheet through the edge of the sheet and passing therethrough along a longitudinal axis of the sheet element, the optical coating being in addition to and distinct from the associated electrodes, the index of refraction of the optical coating being less than the index of refraction of the piezoelectric sheet element whereby when electrically stimulated, the sheet flexes, and the beam of light exiting from the opposite edge of the sheet sweeps out an arc.

4,385,799

DUAL ARRAY FIBER LIQUID CRYSTAL OPTICAL SWITCHES

Richard A. Soref, Newton Centre, Mass., assignor to Sperry Corporation, New York, N.Y.

Filed Jun. 26, 1980, Ser. No. 163,125
Int. Cl.³ G02B 5/172
U.S. Cl. 350—96.19 15 Claims

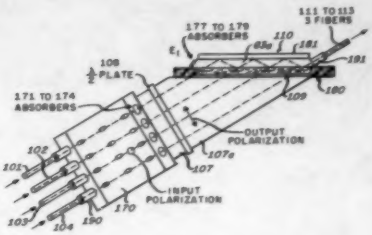
1. Optical switching means comprising:

transparent prism means having a rectangular cross section and first and second inclined faces,

said first inclined face being inclined from a first to an opposed second side of said transparent prism means, and

said second inclined face being inclined from a third to an opposed fourth side of said transparent prism means,

first planar liquid crystal matrix switching means at and parallel to said first inclined face for selectively deflecting light from a plurality of optical input means through said transparent prism means along selected paths,



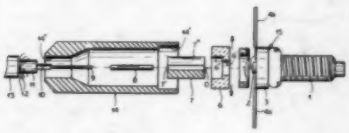
second planar liquid crystal matrix switching means at and parallel to said second inclined face for selectively deflecting said light into ones of a plurality of optical output means.

4,385,800

CONNECTOR FOR COUPLING AN OPTICAL FIBER TO A LIGHT SOURCE, AND METHOD OF ASSEMBLING SAME

Carlo P. Basola, and Guido Chiaretti, both of Milan, Italy, assignors to Cselt - Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Dec. 17, 1980, Ser. No. 217,389
Claims priority, application Italy, Dec. 21, 1979, 69449 A/79
Int. Cl.³ G02B 7/26
U.S. Cl. 350—96.20 12 Claims



1. A connector for coupling an optical fiber to a light source, comprising:

a support carrying a light source spacedly surrounded by a flat first ring;

a second ring bonded substantially coaxially to said first ring, said second ring being provided with a tubular extension remote from said first ring having an axial bore of a diameter smaller than the inner diameters of said rings;

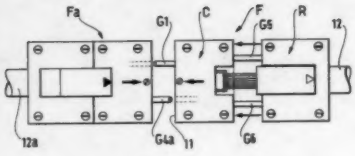
a capillary tube fitted into said axial bore and bonded to said extension, said tube embracing an extremity of an optical fiber bonded thereto with a tip closely spaced from said light source, said fiber being provided with a protective sheath terminating ahead of said tube; and

a cap spacedly surrounding said extension and an adjoining portion of said fiber.

4,385,801
FIBRE-TO-FIBRE CONNECTOR INCLUDING A COMPONENT FOR JOINING IT TO AN OPTICAL CABLE

Vladimir Bubanko, Velizy, France, assignor to Compagnie Generale d'Electricite, Paris, France

PCT No. PCT/FR79/00077, § 371 Date Apr. 29, 1980, § 102(e) Date Apr. 24, 1980, PCT Pub. No. WO80/00498, PCT Pub. Date Mar. 20, 1980
PCT Filed Aug. 29, 1979, Ser. No. 196,500
Claims priority, application France, Aug. 29, 1978, 78 24865
Int. Cl.³ G02B 5/14
U.S. Cl. 350—96.21 9 Claims



1. A fibre-to-fibre connector for connecting fibre cables (12, 12a) comprised of a plurality of optical fibres (18), said connector comprising end-to-end abutting connector parts (F, Fa), each connector part including a joining component (R) for joining it to an optical cable and a connection component for connecting end abutting connector parts together, and wherein;

each connection component (C) including a front surface (11), precision means forming a holding assembly defining holding grooves (25) which each extend from a rear portion of said connection component up to said front surface (11) thereof and which are each suitable for accommodating and holding one of the fibres (18) which are to be connected, first connection guide means (G1) to guide it with respect to the connection component of a complementary connector part (Fa) so as to form a fibre-to-fibre optical connection by accurate positioning of the front surfaces of said two connector parts (F, Fa) in contact with each other;

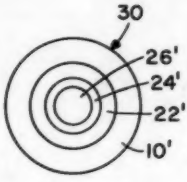
second connection guide means (G5, G6) engaging said joining component (R) to guide the joining component with respect to the connection copmonent (C), so that in a first stage, the joining component may be moved away from the connection component guided by said second guide means; in a second stage, the cable (12) may be fixed to the joining component with said joining component and said connection component separated and the end of each fibre (18) may be distributed at the front of said joining component in a disposition which matches that of the holding grooves (25) of the connection component; and, in a third stage, the joining component may be brought close to the connection component by said first connection guide means until the end of each fibre engages in the holding grooves, and wherein;

said first and second guide means comprise laterally contacting precision hard metal pins interposed at opposite sides of said holding assembly and in lateral contact therewith, and wherein at least one of said guide pins forming said first connection guide means projects outwardly beyond the front surface (11) of said respective connection components for precision fitting within a correspondingly sized precision recess of the front surface of the other said connection component, and wherein said second connection guide means comprises at least one other of said laterally contacting hard metal pins which projects outwardly at the rear of said connection component and wherein said connection component comprises a fixed lateral surface as a frame of reference for said lateral contacting precision hard metal pins and said holding assembly to precisely locate the fibres of both connection parts and for assuring for said fibres of respective connector parts end abutting alignment therebetween.

4,385,802
LONG WAVELENGTH, LOW-LOSS OPTICAL WAVEGUIDE

Paul E. Blaszyk, Big Flats, and Robert Olshansky, Addison, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Jun. 9, 1980, Ser. No. 157,518
Int. Cl.³ G02B 5/172
U.S. Cl. 350—96.33 6 Claims



1. A single-mode optical fiber waveguide for use in the infrared region of the electromagnetic spectrum, said waveguide being of the type comprising

a first glass cladding layer,

a second glass cladding layer disposed on the inner wall surface of said first layer, the softening temperature of said second layer being less than that of said first layer,

an axially disposed core of SiO_2 doped with GeO_2 to increase the refractive index thereof, the resultant core glass exhibiting relatively low attenuation losses at wavelengths between 1.1 and 1.8 μm, the improvement comprising a third layer of pure SiO_2 disposed between said second glass cladding layer and said core, the refractive index of said SiO_2 layer being equal to or less than that of said second cladding layer, the minimum thickness of said third layer being about 1.5 times the radius of said core.

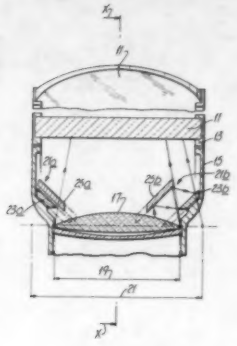
4,385,803
DISPLAY UNITS WITH PERISCOPIC ARRANGEMENT

Stafford M. Ellis, West Sussex, England, assignor to Elliott Brothers (London) Limited, Chelmsford, England

Filed May 4, 1981, Ser. No. 260,401
Claims priority, application United Kingdom, May 19, 1980, 8016480
Int. Cl.³ G02B 27/10
U.S. Cl. 350—174 5 Claims

1. A display unit for a head-up display system comprising a projector having an optical element defining its exit pupil, at least one periscopic arrangement and a combiner, the projector projecting light representing a display onto the combiner for reflection thereby to provide an observer with an image of the display superimposed on his view of the distant scene viewed by transmission through the combiner, each periscopic arrangement comprising a first reflective element and a second element parallel to said first reflective element possessing both light transmissive and light reflective properties, each periscopic arrangement being positioned adjacent to the optical element such that projected light from lateral portions of the exit pupil which would not otherwise be received by the ob-

server without lateral head movement is transmitted to the appropriate portion of the combiner by successive reflections



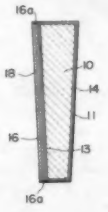
of said light at the said second element and the said first element.

4,385,804

MIRROR USING TRANSPARENT SYNTHETIC RESIN PLATE

Takeo Tamura, and Taiji Yamabe, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohoma, Japan

Filed Apr. 17, 1981, Ser. No. 255,343
Claims priority, application Japan, Apr. 23, 1980, 55-52920
Int. Cl.³ G02B 5/08
U.S. Cl. 350—310 9 Claims



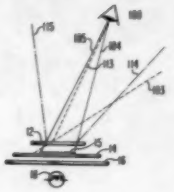
1. A mirror comprising:
a transparent plate of a synthetic resin;
a surface-hardening film coated at least on a front surface of the resin plate;
a reflective film of a metal resistant to moisture deposited on the back side of the resin plate; and
a back-coat layer closely covering the outer surface of the reflective film,
the surface-hardening film, the reflective film and the back-coat layer being all substantially equally permeable to humidity.

4,385,805

LIQUID CRYSTAL LENS DISPLAY SYSTEM

Donald J. Channin, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 902,738, May 3, 1978, abandoned, which is a continuation-in-part of Ser. No. 736,883, Oct. 29, 1976, abandoned. This application Jul. 3, 1980, Ser. No. 165,761
Int. Cl.³ G02F 1/13
U.S. Cl. 350—334 8 Claims



1. A liquid crystal lens display system comprising:
a background display element;
a foreground display element overlying the background display element;
a liquid crystal lens array having a dielectrically anisotropic liquid crystal material covering a first electrode having a plurality of spaced, parallel fingers, and a second electrode having a plurality of spaced, parallel fingers and interleaved with the fingers of the first electrode wherein the lens array is positioned spaced apart from the background and foreground display elements such that the foreground and background display elements are observed through the lens array;
illumination means for illuminating the foreground and background display elements with light which is linearly polarized perpendicular to the parallel electrode fingers; and
means for applying voltage sources to fingers of the first electrode and the corresponding fingers of the second electrode to establish an electric field between said fingers, such that a portion of the foreground display element is obscured by means of the activated fingers causing a variation in the refractive index of the liquid crystal and such that only the corresponding portion of the background display element is observed through the lens array.

4,385,806

LIQUID CRYSTAL DISPLAY WITH IMPROVED ANGLE OF VIEW AND RESPONSE TIMES

James L. Fergason, 5806 Horning Rd., Kent, Ohio 44240

Continuation-in-part of Ser. No. 913,618, Jun. 8, 1978, abandoned. This application Feb. 13, 1980, Ser. No. 121,071
Int. Cl.³ G02F 1/113
U.S. Cl. 350—347 R 12 Claims

1. In a liquid crystal light shutter of the type having a layer of uniaxial liquid crystal material sandwiched between parallel transparent plates, films of transparent conductive material on the plates, means for applying a potential between said films of transparent material to effect a light shutter action, and polarizers on opposite sides of said layer of liquid crystal material; the improvement which comprises at least two retardation plate devices operatively associated with said liquid crystal cell for

compensating for the normal component of birefringence of said liquid crystal material, the optical axes of said retardation

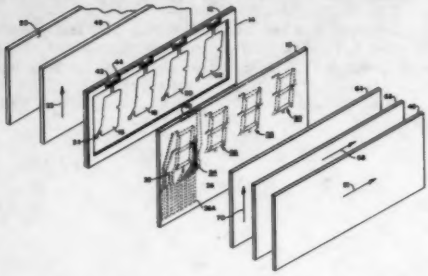


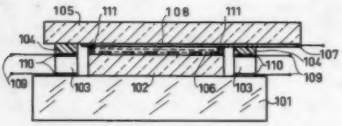
plate devices being parallel to the surfaces of the said retardation plate devices.

4,385,807

VISUAL DISPLAY DEVICE WITH MEMORY AND TELEPHONE EXCHANGE INCORPORATING SUCH A DEVICE

Jean-Noel Perbet; Michel Hareng, and Serge Le Berre, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Sep. 15, 1980, Ser. No. 187,444
Claims priority, application France, Sep. 18, 1979, 79 23243
Int. Cl.³ G02F *1/13*
U.S. Cl. 350—350 S **8 Claims**



1. A display device with a memory comprising:

a smectic liquid crystal layer which can assume a transparent state under the action of an electrical field;

first and second plates enclosing said layer;

at least one first electrode supported by the face of the first plate in contact with the liquid crystal and at least one second electrode supported by the face of the second plate in contact with the liquid crystal said electrodes subjecting part of the liquid crystal layer to an electrical reorientation field; and

means for momentarily modifying the position of the first plate relative to the second in order to bring the liquid crystal into a uniform diffusive state.

4,385,808

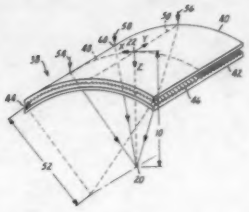
POINT FOCUS REFRACTING RADIATION CONCENTRATOR

Dennis F. Vanderwerf, Cottage Grove, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Nov. 4, 1980, Ser. No. 204,022
Int. Cl.³ G02B *3/08*
U.S. Cl. 350—452 **16 Claims**

1. A point focus refracting radiation concentrator having a focal distance from said concentrator to said point focus comprising:

two linear echelon surfaces each having a plurality of linear echelon elements, said two linear echelon surfaces being crossed at approximately 90° and being curved into a



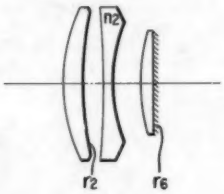
generally cylindrical shape with a radius of curvature approximately equal to said focal distance.

4,385,809

COPYING LENS

Minoru Yokota, and Masamichi Kitagawa, both of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Sep. 2, 1980, Ser. No. 183,383
Claims priority, application Japan, Sep. 7, 1979, 54-114142
Int. Cl.³ G02B *9/14*
U.S. Cl. 350—475 **1 Claim**



1. In a copying lens system of three lenses comprising a first lens of positive meniscus, the convex surface of which faces the object side, a negative second lens having a concave surface at both ends, and a positive third lens having a convex surface at both ends, the rear surface of which is a reflection surface, the improvement comprising dimensioning said lenses to satisfy the following conditions:

$$5f < |r_6| < 8f$$

and

$$0.5f < r_2 < 2f$$

in which f represents the composite focal length of the total system, r_2 represents the radius of curvature of the surface of the lens that stands second from the object side, and r_6 represents the radius of curvature of the surface of the lens that stands sixth from the object side.

4,385,810

CONTACT ENDOSCOPY AND MICRO ENDOSCOPY

Jacques Hamou, Paris, France, assignor to Karl Storz, Tuttlingen, Fed. Rep. of Germany

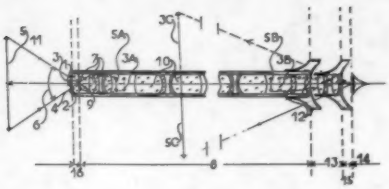
PCT No. PCT/FR80/00024, § 371 Date Oct. 19, 1980, § 102(e) Date Oct. 9, 1980, PCT Pub. No. WO80/01641, PCT Pub. Date Aug. 21, 1980

PCT Filed Feb. 18, 1980, Ser. No. 198,134

Claims priority, application France, Feb. 19, 1979, 79 04168

Int. Cl.³ G02B 15/10

U.S. Cl. 350—520 19 Claims



8. In a contact endoscope device having an ocular end, a distal end, an objective lens means and an optical system between said objective lens means and said ocular end, and a lens on said distal end having an external surface at a predetermined distance from the focal plane of said objective lens means so that said endoscope is adapted for contact examination with an observed area, the improvement comprising:

lens means having a well defined divergence for placement between the ocular and the eye for focusing on the plane of the displaced image when the distance between the external surface of the distal end and a surface being examined is increased, whereby a clear view of the observed area is provided.

4,385,811

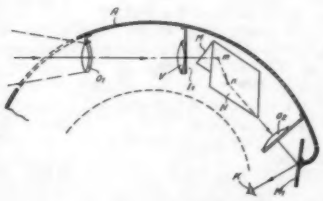
REARVIEW DEVICE INCORPORABLE IN HELMETS

Pier L. Nava, Verderio Superiore, Como, Italy

Filed Apr. 7, 1981, Ser. No. 251,799

Int. Cl.³ G02B 23/02, 23/16

U.S. Cl. 350—569 4 Claims



1. A rearward device for a headpiece, said device comprising an optical system which is mountable on the headpiece said comprises an objective lens which, in use, is directed rearwardly of the wearer of the headpiece for receiving light from an object to the rear of the wearer and forming an image of said object, an eyepiece lens for enabling the wearer of the headpiece to view said image, laterally and vertically inverting reflector means in the path of light rays passing through the objective lens and the eyepiece lens so that the image of the object that is viewed by the wearer of the headpiece is erect and without inversion, and at least one deflecting member which is disposed in the path of light rays passing from the objective lens to the eyepiece lens for deflecting said rays to follow a convexly angled path without affecting the orientation of the image and wherein said optical system includes a field lens which is disposed between the objective lens and the eyepiece lens, a first deflecting member disposed between the objective lens and the field lens and a second deflecting member disposed between the field lens and the eyepiece lens.

4,385,812

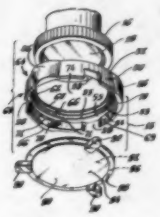
OBJECTIVE LENS COVER ASSEMBLY FOR AN OPERATING MICROSCOPE

Michael T. Wille, Redding, and Nicholas E. Sachuk, Stamford, both of Conn., assignors to Surgikos, Inc., New Brunswick, N.J.

Filed Feb. 2, 1981, Ser. No. 230,703

Int. Cl.³ G02B 21/00

U.S. Cl. 350—587 19 Claims



1. An objective lens cover assembly for use with a disposable operating microscope drape, the objective lens cover assembly being adapted to engage the objective lens frame of a microscope, comprising:

an optically transparent lens cover;

a housing having a annular opening there through from a top end to a bottom end;

said top end including resilient wall portions adapted for engaging the objective lens frame of the microscope;

said bottom end including a circumferential flange, and a resilient peripheral portion extending downwardly from said circumferential flange, for receiving said optically transparent lens cover, said circumferential flange also including a circumferential rib extending downwardly therefrom and spaced from said resilient peripheral portion;

said resilient peripheral portion including resilient lens cover retaining means having a plurality of deflectable projections;

each of said deflectable projections having a base face spaced from said circumferential flange to define lens cover retaining slots therebetween for receiving said optically transparent lens cover therein, when said deflectable projections are deflected outwardly by movement of said optically transparent lens cover toward said circumferential flange, said plurality of deflectable projections being equally spaced about said resilient peripheral portion with each of said base faces dimensioned to occupy only a portion of the periphery of said resilient peripheral portion;

said deflectable projections deflecting inwardly to overlie portions of said optically transparent lens cover when said optically transparent lens cover passes below said base faces of said deflectable projections, thereby positively locking said optically transparent lens cover in the lens cover retaining slots and sealingly seating said lens cover against said circumferential flange and said circumferential rib, while enabling said optically transparent lens cover to be readily disengaged from said housing by flexing said deflectable projections outwardly.

4,385,813

PHOROPTER

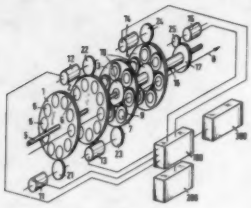
Friedrich Klein, Wedel; Joachim Burmeister, Brombach, and Nils Warming, Hamburg, all of Fed. Rep. of Germany, assignors to J. D. Möller Optische Werke GmbH, Wedel, Fed. Rep. of Germany

Continuation of Ser. No. 98,039, Nov. 28, 1979, abandoned. This application Apr. 15, 1982, Ser. No. 368,698

Claims priority, application Fed. Rep. of Germany, Jan. 16, 1979, 2901459

Int. Cl.³ A61B 3/10, 3/02

U.S. Cl. 351—217 9 Claims



1. A phoropter for performing subjective refraction tests on the eyes of a patient in accordance with the cross-cylinder method wherein cross-cylinder lenses are customarily employed to carry out said method, comprising:

a set of first lens discs and a number of spherical trial lenses mounted on said first lens discs;

a set of second lens discs and a number of cylindrical trial lenses rotatably mounted on said second lens discs so that the axes of said cylindrical trial lenses can be pivoted about an axis parallel to the axes of said second lens discs;

means for supporting said sets of first and second lens discs for rotation about their respective axes;

first drive means for rotatably driving said sets of first and second lens discs to define an observation optical path extending through selected ones of said spherical trial lenses on said first lens discs and selected ones of said cylindrical trial lenses on said second lens discs;

second drive means for pivoting said cylindrical trial lenses;

control means coupled to said first drive means and to said second drive means for determining the rotational positions to which said spherical and said cylindrical trial lenses are driven about the axes of said first and said second lens discs and for determining the pivot angles to which said cylindrical trial lenses are driven in response to operating input signals, said control means including program means for controlling said first and said second drive means to position certain combinations of said spherical and said cylindrical trial lenses in said observation optical path to establish optically cross-cylinder lens systems in said path;

operating means including instruction entry means coupled to said control means for providing said operating input signals to said control means in response to manual actuation of said selection means to obtain a selected combination of said spherical trial lenses and said cylindrical trial lenses in said observation optical path including said certain combinations for establishing said cross-cylinder lens systems; and

indicating means coupled to said control means for displaying specifications for the particular spherical and cylindrical trial lenses positioned in said observation optical path.

4,385,814

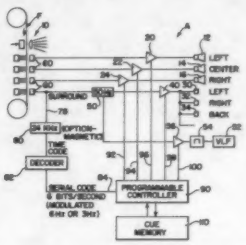
SYSTEM FOR CONTROLLING DISTINCT DEVICES IN A THEATER

James M. Elliott, Los Angeles, Calif., assignor to Paramount Sound Systems Corporation, New York, N.Y.

Continuation of Ser. No. 162,801, Jun. 25, 1980, abandoned. This application Mar. 10, 1982, Ser. No. 356,825

Int. Cl.³ G03B 21/50

U.S. Cl. 352—92 12 Claims



1. In a system for controlling a plurality of distinct devices in a theater displaying a projected motion picture contained on a moving film strip and in synchronization with said film strip, said system having a memory unit for storing groups of digital control signals for operating said distinct devices in a selected manner during a selected portion of said moving strip, means for selecting one of said groups of digital control signals for a selected portion of said moving strip and means independent of said film strip for causing said stored digital control signals of the selected group to be outputted in a time sequence corresponding to said selected portion of said film strip, the improvement comprising: a hardwired counter for each of said distinct devices; means for loading digital counts into said counters indicative of the desired operation of a corresponding device; means for counting said counters at a rate corresponding to the moving rate of said strip; and means for changing said device associated with a particular counter when said count is reached.

4,385,815

SLIDE PROJECTOR

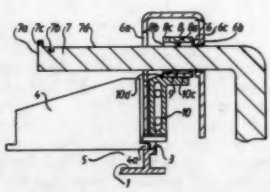
Jürgen Sylla, Sauerlach-Arget, and Hermann Müller, Munich, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Oct. 5, 1981, Ser. No. 309,125

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1980, 3044638

Int. Cl.³ G03B 23/00

U.S. Cl. 353—104 13 Claims



1. A slide projector for framed slides arranged in magazines of at least two different types having different slide compartment widths, the slide projector comprising a slide exchange element for a first magazine with a smaller slide compartment widths and having a portion insertable into and withdrawable from the first magazine in a slide exchange element displace-

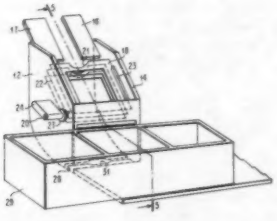
ment direction so as to take along a central slide from three slides, said portion of said slide exchange element having a width which is smaller than a distance between one slide and a neighboring slide in the first magazine with the smaller slide compartment width; a slider for a second magazine with a greater slide compartment width and movable on said portion of said slide exchange element in said displacement direction over a predetermined path, said slider having a width which is greater than the width of said slide exchange element and smaller than a distance between one slide and a neighboring slide in the second magazine with the greater slide compartment width, said slider being spring-engageable with said portion of said slide exchange element in a direction normal to said displacement direction; means forming two magazine paths each for a respective one of the magazines; a magazine sensing element extensible into one of said magazine paths for a respective one of the magazines and displaceable upon insertion of the one magazine in said one magazine path so as to disengage said slider from said portion of said slide exchange element; an abutment arranged to lie in the movement path of said slider upon insertion of said one magazine in said one magazine path and in the disengaged condition of said slider so as to retain the latter, and to lie out of the movement path of said slider upon insertion of said other magazine in said other magazine path and in the engaged position of said slider so as to release the latter; and spring means arranged to urge said slider into engagement with said portion of said slide exchange element.

4,385,816

SLIDE PREVIEWER, SORTER, AND STACK LOADER

Owen L. Lamb, Box 66737, Scotts Valley, Calif. 95066

Filed Jan. 4, 1982, Ser. No. 336,800
Int. Cl.³ G03B *23/02*
U.S. Cl. 353—112 **14 Claims**



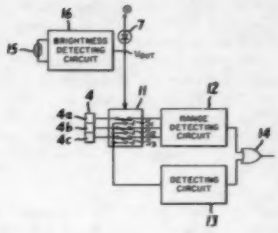
1. A slide-handling mechanism comprising:
a base member;
holding means mounted to said base member;
said holding means having a first receptacle for receiving a slide at one end thereof and for holding a slide therein, and a second receptacle for receiving a slide at one end thereof and for holding a slide therein;
means for allowing said holding means to be moved in the vertical plane from a preview position at an incline to the horizontal plane to a substantially vertical position;
said base member including first restraining means for restraining a slide in said first receptacle in said holding means, said first restraining means including means for allowing a slide to drop from said first receptacle in said holding means when said holding means is in said vertical position; and,
second restraining means for restraining a slide in said second receptacle in said holding means, said second restraining means including means for preventing a slide from dropping out of said one end of said second receptacle in said holding means when said holding means is in said vertical position.

4,385,817

FOCUSING DETECTING DEVICE

Takeo Seito, Shikawatashi, Japan, assignor to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 10, 1980, Ser. No. 196,118
Claims priority, application Japan, Nov. 27, 1979, 54-153177
Int. Cl.³ G03B *7/08*
U.S. Cl. 354—25 **6 Claims**



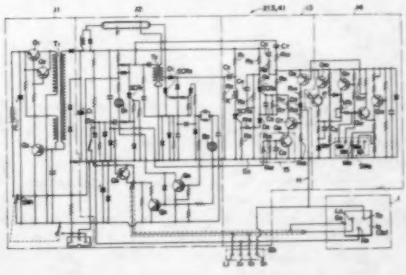
1. A focus detecting device, capable of providing range detection signals corresponding to distances between the camera and objects by receiving with a plurality of photoelectric elements the incident from objects transmitted through a fixed light passage and a movable light passage having a movable mirror, comprising an illuminating system adapted to project light through said movable light passage, and a brightness detecting circuit which provides a signal to integrate said plurality of photoelectric elements into a single photoelectric element when the brightness of an object is insufficient thus receiving the reflected light of the illumination with said photoelectric elements and producing a range detection signal.

4,385,818

MULTIPLE ELECTRONIC FLASH CONTROLLING APPARATUS

Isao Kondo, Hachioji, and Osamu Kawarada, Fuchu, both of Japan, assignors to Olympus Optical Company Ltd., Tokyo, Japan

Continuation of Ser. No. 216,611, Dec. 15, 1980, abandoned.
This application Jul. 19, 1982, Ser. No. 399,479
Claims priority, application Japan, Feb. 13, 1980, 55-16386
Int. Cl.³ G03B *15/05*
U.S. Cl. 354—33 **3 Claims**



1. Apparatus for controlling multiple electronic flash units, comprising:
a main electronic flash unit and at least one secondary electronic flash unit;
each of said electronic flash units including: a flashlight emission circuit for emitting flashlight from a flash discharge tube; a flash illumination control circuit for determining reflected light from a subject being photographed

which is illuminated by the flashlight from the flash discharge tube of each of said electronic flash units and for producing a flash interrupting, control signal; a changeover switch for disabling said flash illumination control circuit; a flashlight interruption circuit for interrupting the emission of the flashlight from each of said flash discharge tubes in response to receipt of said flash interrupting, control signal from said flash illumination control circuit; and an external connection terminal connected to a junction between said flash illumination control circuit and said flashlight interruption circuit for receiving and delivering said flash interrupting, control signal;

said main electronic flash unit being adapted to be electrically connected to said at least one secondary electronic flash unit via said respective external connection terminals through which said flashlight interruption circuit of said at least one secondary electronic flash unit is connected to said flashlight interruption circuit of said main electronic flash unit in parallel; and

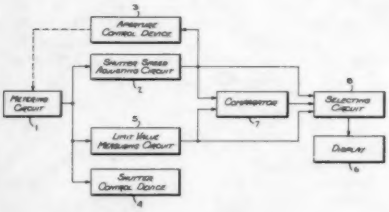
said flashlight interruption circuits of said main and secondary electronic flash units being responsive to receipt of said flash interrupting, control signal from said flash illumination control circuit of said main electronic flash unit to interrupt the emission of flashlight from each of said flash discharge tubes by operating said changeover switch to thereby disable said flash illumination control circuit of said at least one secondary electronic flash unit.

4,385,819

DISPLAY DEVICE IN AUTOMATIC EXPOSURE CONTROL CAMERA

Kenji Toyoda, Kawasaki; Yoshitaka Araki, Tokyo, and Sakuji Watanabe, Warabi, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Continuation of Ser. No. 144,966, Apr. 29, 1980, abandoned, which is a continuation of Ser. No. 966,127, Dec. 4, 1978, Pat. No. 4,204,755. This application Dec. 29, 1981, Ser. No. 335,470
Claims priority, application Japan, Dec. 3, 1977, 52-145513
Int. Cl.³ G03B 7/087, 17/18
U.S. Cl. 354—36 **10 Claims**



1. An automatic exposure control device of a single lens reflex camera having an objective lens and an aperture comprising:

(a) a first means for calculating and generating a first signal in accordance with the brightness of the object light passed through said aperture;

(b) a second means for calculating and generating a second signal determined in accordance with a predetermined program and said first signal;

(c) means for driving said aperture to vary a diameter thereof in response to the shutter release operation;

(d) means for holding said second signal immediately before driving the aperture by said driving means;

(e) means for comparing said first signal and said second signal held by said holding means;

(f) means for latching said driving means in response to the output from said comparing means; and

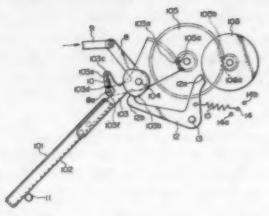
(g) means for controlling a shutter speed in accordance with the brightness of the object light passed through the aperture after said driving means has been latched by said latching means.

4,385,820

MIRRORRAISING MOTION BRAKING MECHANISM

Tetsuji Shono, Kawagoe, Japan, assignor to Asahi Koga U Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 20, 1981, Ser. No. 313,148
Claims priority, application Japan, Oct. 20, 1980, 55/146733
Int. Cl.³ G03B 19/12
U.S. Cl. 354—152 **11 Claims**



1. A single lens reflex camera of the type having a mirror pivotable from a lowered position to a raised position and a governor mechanism for controlling the raising speed of said mirror, said governor mechanism including a flywheel which rotates during the raising of said mirror, the improvement comprising:

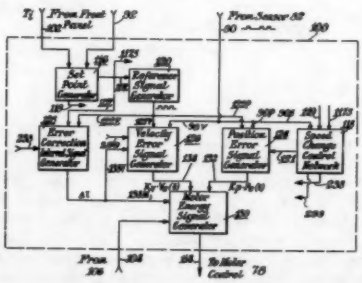
braking means for applying a braking force to said flywheel during a latter portion of the raising motion of said mirror.

4,385,821

AUTOMATIC VELOCITY AND POSITION CONTROLLER FOR A FILM PROCESSOR

Robert W. Kachelries, West Goshen, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 3, 1980, Ser. No. 136,805
Int. Cl.³ G03D 13/00
U.S. Cl. 354—319 **12 Claims**



1. In a film processor including transport rollers for transporting a film through the processor, a drive motor coupled to drive the transport rollers, a network including a sensor for generating signals representative of the actual velocity and of the actual position of the film, a network for generating reference signals representative of the ideal velocity and of the ideal position of the film, and a motor control network for controlling the application of power from a source to the motor, wherein the improvement comprises:

an automatic controller comprising:

a velocity error signal generator for generating a velocity error signal functionally related to the difference between

the actual velocity signal and the reference velocity signal;

a position error signal generator for generating a position error signal functionally related to the difference between the actual position signal and the reference position signal; and,

a motor energy signal generator for generating a total motor error signal that is functionally related to the sum of the velocity error signal and the position error signal and for generating a motor energy signal by summing the total motor error signal over time,

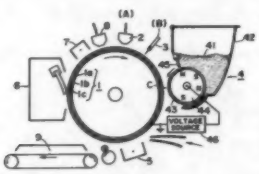
the motor energy signal being applicable to the motor control network to apply a portion of the available energy from the source to the motor to restore the actual position of the film to within a predetermined range of the ideal position and to restore the actual velocity of the film to within a predetermined range of the ideal velocity to compensate for deviations in actual film position and in actual film velocity following a velocity perturbation.

4,385,822

METHOD AND APPARATUS FOR FORMING AND RECORDING COMPOSITE IMAGES

Junichiro Kanbe, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 18, 1981, Ser. No. 245,096
Claims priority, application Japan, Mar. 25, 1980, 55-37905
Int. Cl.³ G03G 15/00
U.S. Cl. 355—3 R **21 Claims**



1. Apparatus for forming and recording a composite image employing the process of forming a composite electromagnetic latent image from a magnetic latent image and an electrostatic latent image, said apparatus comprising:

a latent image forming medium comprising a layer capable of forming and retaining a magnetic latent image and a layer capable of forming and retaining an electrostatic latent image;

means for forming a magnetic latent image in said latent image forming medium; and

means for forming an electrostatic latent image in said latent image forming medium.

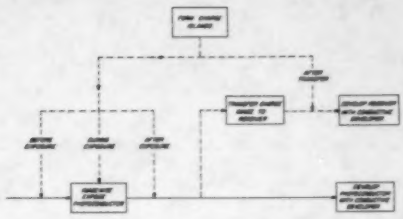
4,385,823

METHOD AND MEANS FOR IMPROVING MAXIMUM DENSITY AND TONAL RANGE OF ELECTROGRAPHIC IMAGES

George P. Kasper, Rochester; Arthur S. Kroll, and Michael Mosehauer, both of Spencerport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 30,668, Apr. 16, 1979, abandoned. This application Mar. 24, 1980, Ser. No. 133,077
Int. Cl.³ G03G 15/00
U.S. Cl. 355—3 R **15 Claims**

13. In an electrographic apparatus which includes an imaging member having an image recording area and means for forming an electrostatic image on said area, the improvement which comprises means for forming on said area, before, during or after forming said image on said area, a plurality of charge islands in addition to any such islands already present, and development means including a supply of a developer



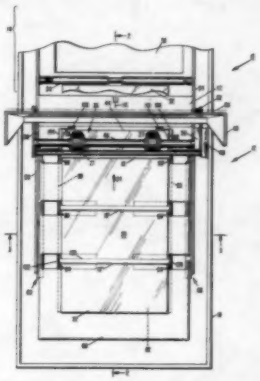
having a maximum resistance of about 10^9 ohms for applying such developer to the resulting electrostatic image.

4,385,824

STATIC DISCHARGE DEVICE

Richard B. Hollo, Levittown, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 8, 1981, Ser. No. 300,239
Int. Cl.³ G03G 15/00
U.S. Cl. 355—3 SH **13 Claims**



1. In an electrical apparatus including conveyor means for conveying sheet material along a path, means for discharging static changes from a surface of said material as it is being conveyed comprising:

a resilient metal strap located over the path, adjacent to the said surface of said sheet, said strap being bowed and being supported relative to the sheet material so that at least a part of the bowed portion of the strap resiliently engages said surface of said material as the sheet material is being conveyed along said path; and

means electrically connecting said strap to a point at a potential such that it operates as a drain for static charge.

4,385,825

COPYING APPARATUS

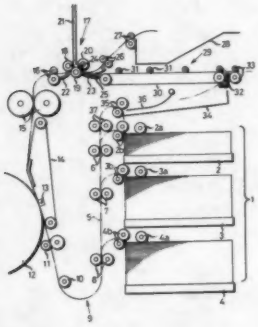
Tamaki Kaneko, Fujisawa, Japan, assignor to Ricoh Co., Ltd., Japan

Continuation of Ser. No. 185,908, filed as PCT/JP 79/0010, May 2, 1972, published as WO 79/01073, Dec. 13, 1979, § 102(e) date Jan. 4, 1980, abandoned. This application May 3, 1982, Ser. No. 374,199
Claims priority, application Japan, May 16, 1978, 53-57157
Int. Cl.³ G03G 15/00, 15/14
U.S. Cl. 355—3 SH **8 Claims**

1. A copying apparatus comprising:

sheet feeding means (2*b*) for feeding one sheet after another

from a stack (2) of sheets in a feed direction and to a first sheet feed path (5);
image forming means (12,13) disposed in said first path for receiving a sheet and for forming an electrostatic latent image, for developing the image and for transfer printing the image on the sheet;
fixing means (15) for fixing the image on the sheet, downstream of said image forming means and in said first path;
sheet ejecting means (27) at an end of said first path for ejecting the sheet with image and having an ejected sheet tray (28);
sheet resupply means (35) with an intermediate tray (34) for receiving the sheet with image and for supplying the sheet with image again to said image forming means over said first path for effecting dual surface copying of the sheet and for forming a multiple image on one side of the sheet;
sheet reversing means (17) located downstream of said fixing means and upstream of said sheet ejecting means and said sheet resupply means with respect to the feed direction;
a first sheet deflection switch (24) for selectively leading a sheet from said first path to a second path intersecting said first path in which the sheet is subjected to a reversing action by said sheet reversing means, and along said first path in which the sheet is not subjected to a reversing action; and
a second sheet deflection switch (25) for selectively leading the sheet from said first and second paths to one of said sheet ejecting means and said sheet resupply means;



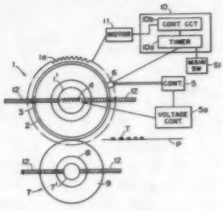
said first switch positioned upstream of said second switch in the feed direction;
said first switch having a first direction for deflecting sheets from said first path to said second path and a second direction for maintaining feeding of sheets along said first path;
said second switch having a first position for leading sheets along said first path to said ejected sheet tray whereby sheets are stacked in said tray face down and in order of copying, and for leading sheets that have passed from said first path to said second path and then back to said first path, to said ejected sheet tray whereby the sheets are stacked face up, said second switch means having a second position for leading sheets from said first path to a third path;
sheet conveying means for conveying sheets in a feed direction on said third path;
a third sheet deflection switch movable to intersect said third path for deflecting sheets into an intermediate tray whereby sheets are resupplied to said image forming means by said resupply means, said third sheet deflection switch movable into a position away from said third path for supplying sheets out of the copy apparatus;
whereby sheets deflected by said first switch to remain in said first path and by said third switch to be supplied to said intermediate tray receive dual surface copying and sheets deflected by said first switch to said second path and then back to said first path, and then to said intermediate tray by said third switch have multiple images formed on one surface thereof.

4,385,826

TONER IMAGE FIXING DEVICE

Masayuki Itoh, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 26, 1981, Ser. No. 247,756
Claims priority, application Japan, Apr. 7, 1980, 55-45330
Int. Cl.³ G03G *15/20*
U.S. Cl. 355—14 FU **35 Claims**



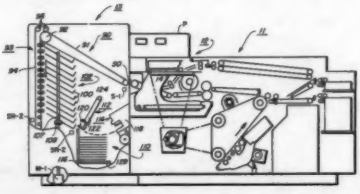
1. A fixing device, comprising:
a heating roller having heating means;
a pressure roller for fixing a toner image on a toner image bearing member to be transported between said heating roller and said pressure roller;
drive means for rotating said heating roller and said pressure roller; and
control means for causing rotation of said heating roller and pressure roller when said heating roller reaches a predetermined surface temperature after the start of function of said heating means.

4,385,827

HIGH SPEED DUPLICATOR WITH FINISHING FUNCTION

Raymond A. Naramore, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 15, 1981, Ser. No. 254,344
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 SH **3 Claims**



1. In a reproduction system having a processor for reproducing information to be copied on copy sheets and to transport the copy sheets to an exit point, the improvement including:
an array of sheet collecting bins adapted to receive copy sheets and to collate the same into sets of copies of different images,
sheet transport means positioned on one side of said array for directing copy sheets into said bins along said side, said sheet transport means including means for receiving copy sheets from the processor at the exit point,
a finishing apparatus arranged to receive the collated sets of copy sheets from the collecting bins of said array, and

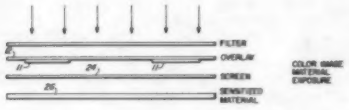
a set transport mechanism arranged adjacent said array of bins and adapted to receive sequentially the collated sets from each of the bins in said array at a fixed collection point, and to transport the same to said finishing apparatus for a binding operation, said transport mechanism being mounted for pivotal movement between said collection point and said finishing station.

4,385,828

METHOD FOR TRANSFERRING AN IMAGE FROM A TRANSLUCENT MATERIAL TO A PHOTOSENSITIZED MATERIAL

Leland T. Prentice, 204 Ponderosa La., Space #7, Burleson, Tex. 76028

Filed Feb. 26, 1981, Ser. No. 238,571
Int. Cl.³ G03B *27/02*
U.S. Cl. 355—132 14 Claims



1. A method of forming a color separation negative by transferring an image from a translucent material to a film negative comprising the steps of:

a. placing the translucent material including an image between the unexposed film negative and a light source;

b. inserting a color separation filter between the light source and the film negative;

c. inserting a half tone screen between the light source and the film negative;

d. compressing the color separation filter, translucent material, half tone screen and film negative into closely abutting contact; and

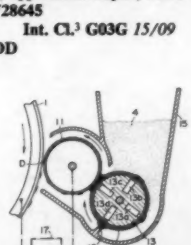
e. energizing the light source for a predetermined time interval to transmit light through the color separation filter, translucent material and half tone screen onto the film negative to transfer a color separated image from the translucent material to the film negative.

4,385,829

IMAGE DEVELOPING METHOD AND DEVICE THEREFOR

Kimio Nakahata, Yokohama; Koichi Tanigawa; Hiroyuki Adachi, both of Tokyo, and Tsuyoshi Watanabe, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 26, 1981, Ser. No. 238,634
Claims priority, application Japan, Mar. 4, 1980, 55/27729; Mar. 6, 1980, 55/28645
Int. Cl.³ G03G *15/09*
U.S. Cl. 355—3 DD 20 Claims



1. A method for developing a latent image on the surface of a latent image bearing member, comprising the steps of:

forming a magnetic brush of one-component magnetic developer on a developer-feeding member under the influence of a magnetic field;

bringing said magnetic brush into contact with the surface of an image-developing member positioned in the proximity of the surface to be developed thereby forming a thin developer layer on said image-developing member;

transporting said thin developer layer to a developing position for performing image development on said surface; and

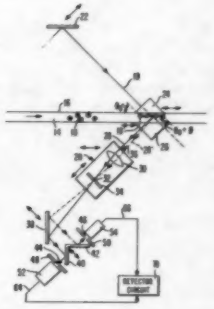
regulating the magnetic brush present in the mutually opposed portions of said developer-feeding member and said image-developing member to reduce the density of developer present in said mutually opposed portions after the completion of a developing process but prior to the termination of displacement of said image-developing member.

4,385,830

DIRECT MEASUREMENT OF VORTICITY BY OPTICAL PROBE

Watt W. Webb, and Michael B. Frish, both of Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Nov. 26, 1980, Ser. No. 210,704
Int. Cl.³ G01P *3/36*
U.S. Cl. 356—28 17 Claims



1. An optical system for the direct measurement of vorticity in a fluid, comprising;

channel means defining a flow path;

an optically clear liquid flowing in said channel;

a plurality of transparent, spherical probe particles carrying planar mirrors, said probe particles having a refractive index and a density approximating that of said liquid and having a size sufficiently small to permit rotation with the vorticity of the said liquid, said particles being suspended in said liquid at a concentration sufficiently low to prevent interparticle interaction and perterbation of the liquid flow, while having a concentration and size sufficiently great to accurately sample the vorticity of said liquid;

a source of light;

means for directing an incident beam of said light into said liquid, said incident beam of light striking and being reflected by said planar mirrors carried by said probe particles;

a detector plane common to said incident beam;

a first aperture plate having a first aperture slit, said first aperture plate being substantially perpendicular to and passing through said detector plane;

means for imaging reflected light beams onto said first aperture plate, said reflected beams lying substantially in said detector plane and being scanned across said aperture plate by the rotation of properly oriented probe particles, the rotation of said probe particles causing the portion of said reflected beams which passes through said first aperture slit to scan through a first angle;

detector means for receiving light passing through said first aperture slit, said detector means including second and third spaced aperture plates having corresponding second and third aperture slits whereby the light from said first

slit scans sequentially from said second aperture slit to said third aperture slit as said light beam scans through said first angle; and

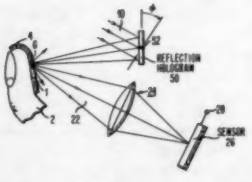
circuit means for measuring the time required to scan said light beam from said first aperture plate to said second aperture plate, said circuit means including first and second photodetectors aligned with the apertures of said second and third aperture slits, respectively, first and second threshold detectors responsive to the outputs of said first and second photodetectors, respectively, and clock circuit means for measuring the elapsed time between actuation of said first and second threshold detectors by their respective photodectors in response to said light beam, said elapsed time being proportional to the rate of rotation of said probe particles and thus to the vorticity of said liquid.

4,385,831

DEVICE FOR INVESTIGATION OF A FINGER RELIEF

Hartwig Ruell, Fürstenfeldbruck, Fed. Rep. of Germany, assignor to Siemens Corporation, Iselin, N.J.

Filed Sep. 22, 1980, Ser. No. 189,176
Int. Cl.³ G06K *9/00, 9/28*
U.S. Cl. 356—71 **7 Claims**



1. A device for investigating the pattern of a finger, comprising in combination:

(a) a source for emitting a beam of radiation;

(b) a fingerbed for supporting said finger, said fingerbed defining an opening which leaves free an area of the skin of said finger for investigation, when said finger rests in said fingerbed;

(c) means for passing said beam of radiation to said area under investigation, said beam thereby forming a spot of impingement on said area which has an extension that is smaller than the distance between two adjacent ridges on said skin under investigation;

(d) means for raster scanning said impingement spot in two dimensions over said area under investigation, said finger skin area thereby scattering back a beam of radiation which is modulated in accordance with said pattern on said area, said scanning means comprising a reflection hologram which is tiltable about an axis;

(e) measuring means responsive to said radiation;

(f) lens means for collecting and transmitting said back-scattered beam of radiation to said measuring means, said measuring means thereby measuring the distribution of the back-scattered radiation in accordance with the ridge-valley pattern of said area under investigation; and

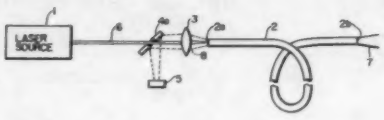
(g) output means associated with said measuring means for producing an output signal representing the intensity of back-scattered radiation.

4,385,832

LASER POWER TRANSMITTING OPTICAL FIBER DAMAGE DETECTING DEVICE

Yuzuru Doi, No. 2-2-26, Tohoku, Niiza-shi, Saitama, and Noriaki Kawamura, No. 2-37-12, Maeno-cho, Itabashi-ku, Tokyo, both of Japan

Filed Aug. 29, 1980, Ser. No. 182,742
Claims priority, application Japan, Sep. 11, 1979, 54-116429
Int. Cl.³ G01N *21/88*
U.S. Cl. 356—73.1 **6 Claims**



1. A device for detecting damage in a laser power transmitting optical fiber comprising:

a laser power transmitting optical fiber having an incident end face and an emergent end face, said emergent end face being coated with a material designed to alter an intensity of a reflected laser light generated when an incident laser light passes through said fiber and exits said fiber through said emergent end face, said coating material not being applied to other parts of said fiber except for said emergent end face thereof;

a focusing optical system for focusing said reflected laser light after it emerges from said incident end face of said optical fiber; and

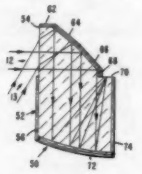
detector means for detecting said damage, said detector means being disposed in the path of said reflected laser light focused by said focusing optical system and being disposed outside the path of said laser light applied to said incident face.

4,385,833

APPARATUS FOR RECEPTION AND RADIATION OF ELECTROMAGNETIC ENERGY IN PREDETERMINED FIELDS OF VIEW

Leland V. Gardner, Buellton, Calif., assignor to Santa Barbara Research Center, Goleta, Calif.

Filed Dec. 5, 1980, Ser. No. 213,266
Int. Cl.³ G01B *11/26*
U.S. Cl. 356—141 **3 Claims**



1. A receiver for providing electrical signals indicative of the angles of incidence of electromagnetic radiation from a target in one of a plurality of predetermined fields of view comprising:

a first planar transparent surface which provides an input aperture;

second and third coparallel planar surfaces extending normally from said first planar surface so as to partially define a chamber therebetween, said second and third surfaces providing partially reflective interior sidewalls for said chamber;

a plurality of fourth planar reflective surfaces, one for each field of view, extending normally between said second and third surfaces to at least partially define the top and rear

surfaces of said chamber, each disposed relative to said first surface to reflect to a fifth surface electromagnetic radiation lying in a predetermined field of view;

said fifth surface extending normally between said second and third surfaces to define the floor of said chamber, said fifth surface being reflective and curved so that electromagnetic radiation reflected from fourth surfaces is reflected by said fifth surface to a line image on an output aperture, whereby the radiant power distribution along said line image is proportional to the angle of incidence of said radiation relative to said first surface; and

detector means mounted on said output aperture to measure the radiant power distribution along said line image and thereby develop an electrical signal indicative of the angle of incidence of electromagnetic energy.

4,385,834

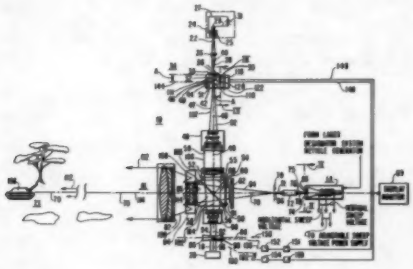
LASER BEAM BORESIGHT SYSTEM

Richard F. Maxwell, Jr., Catonsville, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 28, 1980, Ser. No. 172,785

Int. Cl.³ G01B *11/27*

U.S. Cl. 356—153 **15 Claims**



1. Apparatus for directing a laser beam to an object in a field of view, for aligning said laser beam and for indicating the position of said laser beam in said field of view comprising:

first means for displacing said laser beam in response to an error signal;

second means for both reflecting a first portion of said laser beam and for transmitting the remainder of said laser beam;

third means for both directing said first portion of said laser beam to an object in a field of view and for directing radiant energy from said field of view through said second means into a fourth means for focusing said radiant energy upon a means for indicating;

said second means being transmissive to said radiant energy from said field of view;

fifth means positioned for intercepting said remainder of said laser beam and having a reflective surface at the wavelength of said laser beam for reflecting said remainder of said laser beam onto a detector;

a beam of radiant energy;

said fifth means being transmissive to said beam of radiant energy;

sixth means for focusing said beam of radiant energy through a focal point prior to passing said beam of radiant energy through said reflective surface of said fifth means at the same location said remainder of said laser beam is reflected;

said beam of radiant energy and said sixth means are positioned to direct said beam of radiant energy to said second means;

said second means including means for reflecting said beam of radiant energy into said fourth means;

said fourth means including means for focusing said beam of radiant energy upon said means for indicating; and

said detector including means for generating an error signal as a function of the position on said detector where said remainder of said laser beam impinges;

said error signal coupled to said first means.

4,385,835

COMPENSATING DEVICE

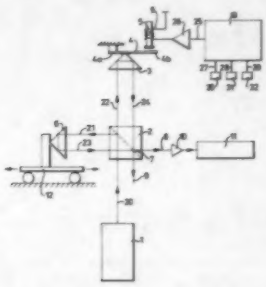
Gerhard Westerberg, Djursholm, Sweden, assignor to Micronic AB, Danderyd, Sweden

Filed Mar. 27, 1981, Ser. No. 248,448

Claims priority, application Sweden, Apr. 3, 1980, 8002604

Int. Cl.³ G01B *9/02*

U.S. Cl. 356—358 **3 Claims**



1. A compensating device in a laser interferometer, used for example for range measurement, the laser interferometer comprising a laser (1), a prism (6) rigidly connected to a movable object, a beam splitter prism (2) and a stationary prism (3), characterized in that said compensating device is rigidly connected to the interferometer stationary prism (3) and comprises means (4,5) capable of and for changing the position of said stationary prism (3) in a direction towards and away from the beam splitter prism in response to and by means of an electric signal transmitted to said compensating device from a unit (19) designed to sense at least a condition which influences the wave length of the laser light and thereby affects the accuracy of the laser interferometer, whereby said electrical signal to said compensating device represents the desired control input to said compensating device to provide desired movement of said stationary prism to provide compensation within the interferometer for said condition.

4,385,836

PHOTOELECTRIC DIGITAL POSITION MEASURING SYSTEM

Walter Schmitt, Traunreut, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Feb. 20, 1981, Ser. No. 236,164

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1980, 3007311

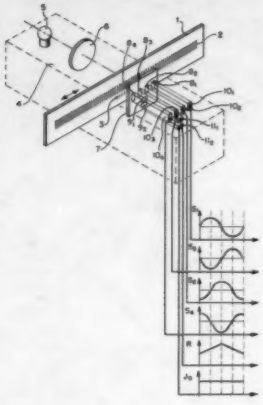
Int. Cl.³ G01B *11/04*

U.S. Cl. 356—374 **25 Claims**

1. In combination with a digital photoelectric position measuring device comprising a scale; means for scanning the scale to generate scanning signals; and means, spatially separated from the scanning means, for evaluating the scanning signals; wherein the scanning means includes a scale illuminating means for illuminating the scale and at least one photoelectric circuit comprising at least one pair of scanning signal photosensitive elements for generating counterphase scanning signals; and wherein the evaluating means includes at least one

pulse forming means responsive to the counterphase scanning signals; the improvement comprising:

direct flux signal photosensitive means for generating a direct flux signal, the direct flux signal photosensitive means being illuminated by the scale illuminating means; and



means for applying at least a portion of the direct flux signal to the at least one photoelectric circuit;

said direct flux signal photosensitive means, scale illuminating means and applying means cooperating to balance the at least one pair of scanning signal photosensitive elements.

4,385,837

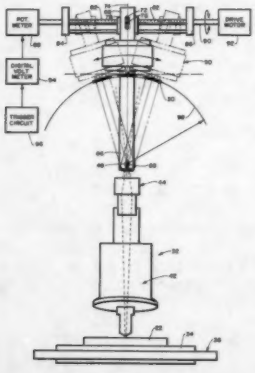
APPARATUS AND SYSTEM FOR LINEWIDTH MEASUREMENTS

Richard R. Schram, Burbank, Calif., assignor to Irvine Optical Corporation, Burbank, Calif.

Continuation-in-part of Ser. No. 908,232, May 22, 1978. This application Jan. 29, 1981, Ser. No. 229,655

Int. Cl.³ G01B *11/02*

U.S. Cl. 356—387 **1 Claim**



1. An apparatus for measuring the linewidths of a microelement, comprising:

means for holding said microelement in a selected fixed position,

means for projecting a fixed magnified real image of at least one line of such microelement, such image lying along a circular path the center of which is coincident with the exit pupil of said projecting means and having dark and light portions corresponding to respective portions of said microelement of different relative opacity,

means mounted for pivotal movement about and continuously optically aligned with such exit pupil for optically scanning across such fixed image along such circular path and for producing an electrical output the amplitude of which corresponds to the relative brightness of respective adjacent portions of such image, said electrical output varying between two limit amplitudes corresponding, respectively, to the darkest and the brightest scanned portions of said magnified image, and

means for determining the distance traversed by said optical scanning means between adjacent image portions of substantially identical selectable brightness, whereby the width, whether large or small, of such one line of such microelement, being directly proportional to such traversed distance, is directly and automatically determined by such apparatus with greatly enhanced precision and without reliance upon operator judgment.

4,385,838

ALIGNMENT DEVICE

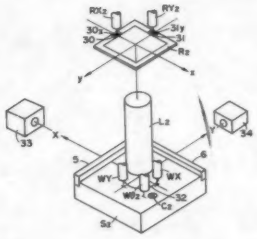
Kiwao Nakazawa, Tokyo, and Akikazu Tanimoto, Kawasaki, both of Japan, assignors to Nippon Kogaku K. K., Tokyo, Japan

Filed Jan. 14, 1981, Ser. No. 225,049

Claims priority, application Japan, Jan. 19, 1980, 55-5156; Nov. 7, 1980, 55-156575

Int. Cl.³ G01B *11/00*

U.S. Cl. 356—399 **8 Claims**



1. An alignment device for aligning an object to a predetermined position, comprising moving means adapted to mount the object thereon and to move in first and second orthogonal directions X and Y, respectively, the object having first and second marks thereon with a predetermined separation therebetween, the marks being located on a line substantially parallel to the X direction, and having a third mark located thereon at a position different from the first and second marks; coordinate measuring means having orthogonal measuring axes X and Y which are parallel to the X and Y directions, respectively, for measuring the position of the moving means; first observing means having a first observation center coincident with the Y measuring axis for detecting the first mark; second observing means having a second observation center which is not coincident with either of the measuring axes X and Y for detecting the second mark, the first and second observation centers lying on a line segment that is parallel to the X measuring axis and the distance between the first and second observation centers being substantially equal to the separation between the first and second marks; and third observing means having a third observation center coincident with the X measuring axis; the coordinate measuring means having means for measuring the location of said moving means in the Y direction when the first and second observing means detect the first and second marks, respectively, and having means for measuring the location of the moving means in the X direction when the

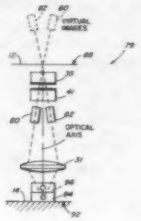
third observing means detects the third mark, thereby establishing the location of the object with respect to the X and Y measuring axes.

4,385,839

AUTOMATIC ALIGNMENT SYSTEM

William E. Westell, Weston, Mass., assignor to Baird Corporation, Bedford, Mass.

Filed Jul. 31, 1980, Ser. No. 173,997
Int. Cl.³ G01B *11/00*
U.S. Cl. 356—400 **11 Claims**



1. An electro-optical device for generating data signals representing relative displacement between an aperture pattern on a master in an object plane and a reflective pattern on a workpiece in an image plane, said device comprising:

(a) a reticle pattern in an object plane;

(b) a reflective pattern in an image plane;

(c) imaging means disposed in an optical path between said object plane and said image plane;

(d) source means for generating reference radiation in at least two paths, said reference radiation directed towards the aperture pattern, and then towards said reflective pattern;

(e) means for splitting said reference radiation;

(f) reference detector means for sensing a first portion of said split reference radiation, said first portion directed directly towards said reference detector means;

(g) convolution detector means for sensing a second portion of said reference radiation, said second portion reflected from the reflective pattern; and

(h) processor means operatively connected to said reference detector means and said convolution detector means, said reference detector means and said convolution detector means generating signals having a phase relationship related to the relative displacement between the aperture pattern and the reflective pattern, said processor means comparing the phase of said signals generated by said reference detector means and said convolution detector means and generating data signals representing the relative displacement between the master and the workpiece.

4,385,840

MIXING APPARATUS

Peter M. Wisneski, Houston, Tex., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 239,815, Mar. 2, 1981, abandoned. This application Jun. 1, 1981, Ser. No. 268,957
Int. Cl.³ B01F *5/00, 5/24*
U.S. Cl. 366—336 **10 Claims**

1. Apparatus for blending flowable particles consisting essentially of:

A. A first vertically aligned mixer of essentially cylindrical shape including;

(1) a principal section that is essentially cylindrical in shape,

(2) a bottom section of conical shape to provide ready gravity flow of particles from the mixer,

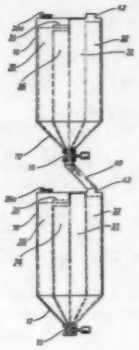
(3) a centrally positioned discharge port in the bottom of the mixer,

(4) a valve in said discharge port,

(5) a series of at least six vertical partition walls within the mixer, each of which extends radially from the midpoint of the mixer to the mixer wall to divide the mixer into at least six storage compartments, each of which differs in height from each of the others, said vertical partition walls being further characterized in that;

(a) the partition walls are positioned in regular descending order of height about the midpoint of the mixer so that each wall other than the highest wall is higher than one adjacent wall and lower than the other adjacent wall,

(b) the angles formed between each adjacent pair of partition walls being substantially equal so that each storage compartment has substantially an equal volumetric capacity,



(c) the differences in height of the partition walls are such that as each storage compartment is filled with particles, additional particles added to the top of said compartment readily overflow into the adjacent compartment, and

(d) the bottom of each partition wall extends to within inches of the discharge port, the bottom construction of the partition walls being such that particles flow by gravity at substantially equal volumetric rates from each compartment when the valve of the discharge port is opened,

(6) an inlet port in the top of the mixer and positioned so that particles fed therethrough flow by gravity directly into the compartment defined by the first and second highest vertical partition walls,

B. A second vertically aligned mixer, the volumetric capacity and construction of said second mixer being essentially identical to said first mixer, and

C. Means for feeding flowable particles from the discharge port of the first mixer to the inlet port of the second mixer.

4,385,841

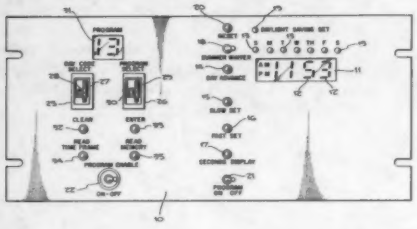
DIGITAL PROGRAM CONTROL CLOCK

Justin Kramer, 1028 W. 8th Pl., Los Angeles, Calif. 90017

Filed Aug. 1, 1980, Ser. No. 174,680
Int. Cl.³ G04B *19/24*; G04C *19/00*; G04F *8/00*
U.S. Cl. 368—29 **18 Claims**

1. An electronically operated control clock system adapted to be operated from a single program control panel to play a program output at specific times of day on selected days throughout a chosen period, said system comprising a program unit selector on said panel and an accompanying electronic memory bank of program unit selections having a non-limited program unit capacity, a visual time display on said panel for

display of selected days and hours of output and accompanying electronic clock implementation means, and an electric circuit interconnecting said program unit selector, said memory bank, said time display and said electronic clock implementation means, a day code selector for multiple day combinations throughout a weekly cycle and accompanying implementation means in said circuit, a day advance control with visual day information display means on said panel and accompanying electronic day advance decode means in said circuit, clock setting control means on said panel and accompanying electronic clock advance actuating means in said circuit, program enter and program clear implementation means in said circuit, switch means interconnected with said circuit for switching between a program setting cycle and program output cycle, said clock setting control means and accompanying clock advance actuators being operable in both said cycles, a visual output unit display, and reading control means on the panel with accompanying read implementation means in said circuit operable when said output cycle is in inactive condition for reading program information as visual output units and for reading corresponding time information.

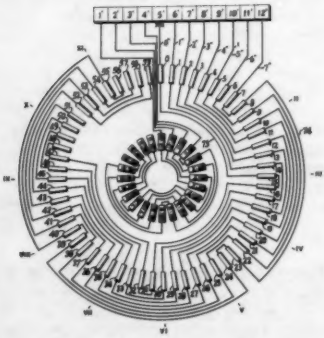


4,385,842

ELECTRONIC TIMEPIECE FOR INDICATING DIGITAL SUBDIVISIONS OF TIME IN A SUBSTANTIALLY CONVENTIONAL FORMAT

Leo Wiesner, Kew Gardens, N.Y., assignor to Timex Corporation, Waterbury, Conn.

Filed Mar. 10, 1975, Ser. No. 556,758
Int. Cl.³ G04B *19/30, 19/34*
U.S. Cl. 368—242 **8 Claims**



1. A time indicating liquid crystal display for an electronic timepiece comprising:

a first substrate with a plurality of electrically conductive radial time indicating elements formed on a single surface of said first substrate and grouped into arcuate sets of adjacent circumferentially spaced time indicating elements,

a second substrate with a plurality of common electrodes, each associated with one of said sets,

liquid crystal electrooptic means between said first and second substrates, and

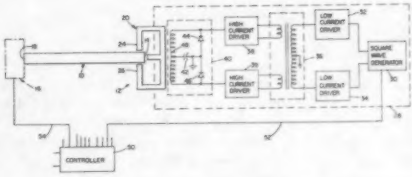
conductor means formed on said single surface of said first liquid crystal substrate in an alternating manner for electrically connecting said radial time indicating elements into a plurality of strings, each string containing only one time indicating element from each set.

4,385,843

SAMPLE HEATER FOR NON-DESTRUCTIVELY DETERMINING THE COMPOSITION OF AN UNKNOWN MATERIAL SAMPLE

Ogden H. Hammond, III, Belmont, and John T. Wroclawski, Framingham, both of Mass., assignors to The Hetra Corporation, Newport, R.I.

Filed Feb. 17, 1981, Ser. No. 234,891
Int. Cl.³ G01N *25/00*
U.S. Cl. 374—43 **4 Claims**



1. In a system for determining whether a sample of precious metal has a purity of composition that is within a given range of variance from that of a standard sample of known purity of composition, said system including means for applying a finite heat pulse to a first point of said sample and monitoring the temperature vs. time response of a second point of said sample, that improvement wherein said means for applying said finite heat pulse includes an induction heater disposed adjacent said first point for inducing a flow of current in said sample adjacent said first point in response to the application of alternating current to said heater, and means for applying said alternating current to said heater at a frequency of not less than 1 kHz, said induction heater comprising a ferromagnetic structure for inducing a magnetic flux field through said sample, and a coil inductor adjacent saidstructure for inducing a magnetic field in said structure.

4,385,844

NOVEL COMPOSITIONS, DEVICES AND METHOD

James L. Fergason, Kent, Ohio, assignor to Becton, Dickinson and Company, East Rutherford, N.J.

Continuation-in-part of Ser. No. 6,267, Jan. 25, 1979, abandoned, which is a continuation of Ser. No. 785,609, Apr. 7, 1977, Pat. No. 4,140,016. This application Sep. 22, 1980, Ser. No. 189,808
Int. Cl.³ C09K *3/34;* G01K *11/16, 11/18, 3/00*
U.S. Cl. 374—160 **14 Claims**

1. A temperature indicating composition for use in a thermometric device, which comprises;

(a) 25 to 60 percent by weight of an optically active, noncholesteric, inert compound; in admixture with

(b) 40 to 75 percent by weight of a mixture of two different nematic types of liquid crystal selected from the group consisting of 4-alkylphenyl-4-alkoxybenzoates, 4-alkylphenyl-4-alkylbenzoates, 4-alkoxyphenyl-4-alkylbenzoates, and 4-alkoxyphenyl-4-alkoxybenzoates, said two having liquid transition points within about 20° C. of each other;

the proportion of (a) being that which selectively scatters light from the visible spectrum at temperatures below the liquid

transition point for said composition and which will impart a color change to the composition when the composition is warmed to its liquid transition point.

5. An improved temperature recording device, which comprises;

an opaque support member;

a first liquid crystal composition disposed on said support member, said composition comprising a composition according to claim 1; and

a second liquid crystal composition disposed on said support member, said second composition comprising a composition according to claim 1;

the liquid transition point for said first liquid crystal composition differing from the liquid transition point for said second liquid crystal composition.

4,385,845

FLYWHEEL APPARATUS FOR STORING ELECTRICAL ENERGY

Yoshinobu Hoshino, Kobe, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Hogyo, Japan

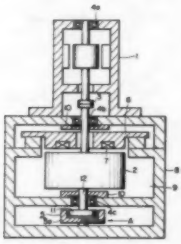
PCT No. PCT/JP81/00149, § 371 Date Nov. 17, 1981, § 102(e) Date Nov. 17, 1981, PCT Pub. No. WO82/00322, PCT Pub. Date Feb. 4, 1982

PCT Filed Jun. 30, 1981, Ser. No. 324,355

Claims priority, application Japan, Jul. 10, 1980, 55-95336

Int. Cl.³ F16C *32/06, 17/04, 17/08*

U.S. Cl. 384—123 **2 Claims**



1. A flywheel apparatus for storing electrical energy, said apparatus including a thrust bearing device which comprises a thrust plate connected to the rotatory part of said apparatus, and having a lower surface defining a thrust bearing surface, and a thrust bearing having a pressure receiving surface facing said lower surface of said thrust plate, and defining a thrust bearing surface, said pressure receiving surface being provided with a plurality of radially extending grooves, each of said grooves having at least one sidewall defining an upwardly inclined land as viewed in the direction of rotation of said rotatory part, said thrust bearing being further provided below said pressure receiving surface with a cooling fluid passage connected to an electromagnetic valve means for opening said electromagnetic valve upon interruption of power supply to allow a cooling fluid to flow into said passage, means being provided for maintaining a hydraulic fluid between said thrust bearing surfaces during interruption of power supply.

4,385,846

AXIAL-BEARING ARRANGEMENT ON SHAFTS, IN PARTICULAR IN SPEED-CHANGE GEARS OF MOTOR VEHICLES

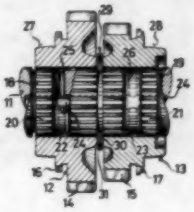
Timotheus Knauss, Mannheim, Fed. Rep. of Germany, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 20, 1981, Ser. No. 323,419

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1981, #106874[U]

Int. Cl.³ F16C *17/04*

U.S. Cl. 384—420 **1 Claim**



1. A longitudinal thrust bearing arrangement for a shaft of a change-speed gearing of a motor vehicle, said thrust bearing comprising an annular groove in the shaft, a two-part ring which is inserted in said annular groove and of which the individual ring parts are held together by a closed outer ring narrower axially than said ring parts, and the ring parts are secured against rotation in peripheral direction by lugs which are directed radially inwardly and engage in corresponding cavities in the shaft, each of the lugs are arranged at one end only of the respective individual ring parts.

4,385,847

DAISY WHEEL PRINTER

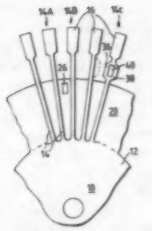
Gerald Avison, Cambridge, England, assignor to Spiralux Limited, Kent, England

Filed Jul. 2, 1981, Ser. No. 279,761

Claims priority, application United Kingdom, Jul. 9, 1980, 8022460

Int. Cl.³ B41J *1/30*

U.S. Cl. 400—144.2 **5 Claims**



1. A printer having a printing head incorporating a daisy wheel having a central disc portion and a plurality of character stalks radiating from said central disc and having a device for detecting a datum position of the daisy wheel, wherein said datum position detector comprises a mask carried by the disc portion of the daisy wheel having a peripheral portion which covers a radial zone of the daisy wheel transversed by the character stalks, said peripheral portion having an aperture to expose at said radial zone only the interstice between a unique pair of character stalks, the detector also including a light source and a light sensitive sensor responsive to an interrupted light beam from the source which is incident on the peripheral

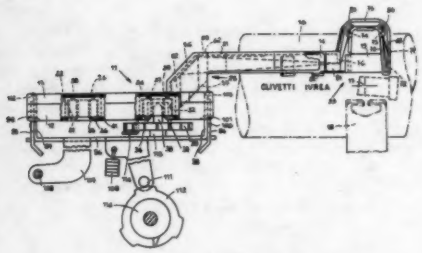
portion of the mask, and further wherein the rotational position of the daisy wheel relative to the datum is sensed by a second light sensitive sensor responsive to the interrupting action of the character stalks on a light beam which is incident on a second radial zone of the daisy wheel radially outside said first radial zone and wherein said second radial zone is immediately adjacent said first radial zone, and a common light source is employed for directing light onto both said zones, the first sensor being responsive only to light received through the datum aperture in the mask at the first radial zone and the second sensor being responsive only to light received past the stalks at said second radial zone.

4,385,848

CARTRIDGE FOR A TYPEWRITER CORRECTION RIBBON

Mario Camosso, Banchette, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Feb. 6, 1981, Ser. No. 232,255
Claims priority, application Italy, Feb. 8, 1980, 67188 A/80
Int. Cl.³ B41J *32/00, 35/04*
U.S. Cl. 400—208 **13 Claims**



1. A cartridge (11) for use in a correcting ribbon (19) for a hammer typewriter of the type comprising a platen (16) which defines a typing point (17), support means for removably supporting the cartridge (11) and means pivoting the support means between a rest position in which the typing point (17) is visible and a working position in which the cartridge (11) has the correcting ribbon (19) in front of the typing point (17); wherein the cartridge (11) comprises:

a container (12) having a cover lying in a plane (13), a feed-spool (22) and a take-up spool (24) for said correcting ribbon disposed side by side in the container (12);

a lateral arm (14) for guiding the correcting ribbon (19) towards the typing point, wherein said lateral arm lies on a plane disposed above the horizontal plane of the cover (13) and extends at a side of said container towards the typing point (17) parallel to said cover (13); and

a distance piece (25) which projects upwardly from the horizontal plane of of the cover at a corner of the container (12) and connects the container (12) with the lateral arm (14), and wherein said distance piece (25) comprises deviation surfaces (53, 54, 56 and 57) for guiding the correcting ribbon (19) among the feed-spool (22), the lateral arm (14) and the take-up spool (24).

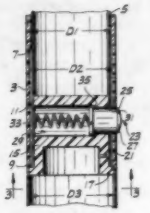
4,385,849

EXTENSIBLE AND RETRACTABLE ROD

Stephen B. Crain, Mound City, Ill., assignor to Crain Enterprises, Inc., Mound City, Ill.

Filed Feb. 2, 1981, Ser. No. 230,339
Int. Cl.³ F16B *7/10*
U.S. Cl. 403—109 **20 Claims**

1. An extensible and retractable rod comprising an outer tubular section and an inner section of substantially constant outside diameter telescopically received in the outer section for extension and retraction relative thereto, said outer section having a first internal shoulder spaced from but relatively close to one end of the section, and a second internal shoulder spaced substantially farther away from said one end, said outer section being dimensioned to have a first inside diameter between said one end of the section and the first shoulder, a second inside diameter greater than the first between said first and second shoulders, and a third inside diameter greater than the second between said second shoulder and the other end of the section, said first inside diameter of the outer section being dimen-



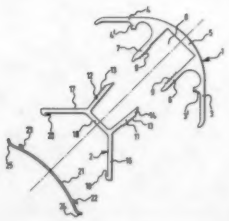
sioned for a relatively close clearance fit between the sections, and said second inside diameter of the outer section being dimensioned for a relatively loose clearance fit between the sections, said inner section having stop means at one end thereof engageable with said second shoulder of the outer section for limiting extension of the two sections relative to one another, and means for releasably locking the inner section in an extended position relative to the outer section, with said relatively close clearance fit between the sections rigidly holding the sections in generally coaxial alignment.

4,385,850

DEVICE FOR JOINING PANELS EDGE-TO-EDGE

Peter L. Bobath, Gerrards Cross, England, assignor to Spacetrekker Products Limited, Bagshot, England

Filed May 7, 1980, Ser. No. 147,604
Claims priority, application United Kingdom, May 8, 1979, 7915903
Int. Cl.³ F16B *1/00*
U.S. Cl. 403—205 **9 Claims**



1. A device for joining panels, said device comprising:

a first section;

a second section mounted to said first section, said first and second section mounted together to define recesses between said first and second section for receiving the edges of said panels to be joined;

said first and second section each having at least two wall portions;

a first connection member interposed said at least two wall portions of the first section, said first connection member having two diverging resilient limbs, each of said two limbs further being provided with a plurality of serrations;

a second connection member interposed said at least two wall portions of the second section, said second connection member having two substantially rigid limbs fixed

relative to each other defining a recess therebetween, each of said two limbs being provided with a plurality of serrations; and

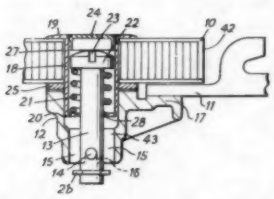
said two diverging resilient limbs of said first connection member further being adapted to be inserted into said recess defined by said two substantially rigid limbs of the second connection member and being sufficiently flexible toward each other yet rigid with their associated wall portions such that upon insertion of the two diverging resilient limbs of the first connection member into the recess defined by said two substantially rigid limbs of the second connection member; said resilient limbs are deflected toward each other and the associated wall portions of said first section are, as a result, deflected toward the other wall portions, the first and section sections are also pressed toward each other and the plurality of serrations on the two diverging resilient limbs engage the plurality of serrations on the two substantially rigid limbs to secure said first connection member to said second connection member whereby the associated first and second section wall portions are pushed into clamping contact with the respective surfaces of the panels to be joined.

4,385,851

CLAMPING METHOD AND DEVICE

Roger Bellamy, Leicester, England, assignor to Camloc Industrial Fixings (UK) Limited, Leicester, England

Filed Dec. 31, 1980, Ser. No. 221,860
Int. Cl.³ F16B *13/00*
U.S. Cl. 403—406 **11 Claims**



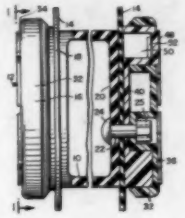
1. A device for clamping first and second members together, comprising a cup which has an open end, a base, an aperture in said base and an outwardly extending flange around said open end; a pin rotatably supported in said aperture; a washer surrounding said cup, the first member being receivable between said flange of said cup and said washer; a clamping element supported on said pin on the side of said base remote from said flange; a radially outwardly extending arm on said clamping element; means for preventing rotation of said clamping element relative to said pin, said clamping element and said arm thereon being rotatable with said pin between a clamping position in which said arm engages the second member and clamps it against the first member and a released position in which said arm is free of engagement with the second member; a spring arranged to bias said pin and said clamping element in a direction toward said open end of said cup; and rib means on one of said washer and clamping element and recess means on the other of said washer and clamping element, said rib means being cooperable with said recess means in said clamping position for resisting relative rotation of said washer and clamping element.

4,385,852

BUMPER END CAP ASSEMBLY FOR PNEUMATIC TUBE SYSTEM CARRIERS

Allen A. Mossler, 511 Elmore Ave., Park Ridge, Ill. 60068

Filed Sep. 25, 1981, Ser. No. 305,541
Int. Cl.³ B65G *51/06*
U.S. Cl. 406—190 **5 Claims**



1. A bumper end cap assembly for fixed attachment to an end of a cylindrical carrier for use in a pneumatic tube system comprising bumper retainer means and interlocking resilient bumper means, said retainer means being

(a) formed of moldable relatively hard tough material and characterized as having a generally annular shaped wear surface portion having an outer periphery of a diameter greater than said cylindrical carrier,

(b) formed with a central hub section, said central hub section being formed with a plurality of spaced axially aligned fastener receiving recesses, and

(c) formed with a plurality of discrete radial rib means connecting said hub section to said wear surface portion and defining therewith a plurality of aperatures,

said resilient bumper means being formed of moldable material more resilient and compressible than said retainer means and characterized as having

(d) a central transverse portion formed with a pair of through bores alignable with said fastener receiving recesses, said transverse portion having a diameter greater than said central hub section and being fastenable into trapped fixed relationship between said hub section and the end of said carrier,

(e) a channel shaped in cross section peripheral portion having an outer diameter surface to receive and support said wear surface portion,

(f) transverse rib supporting portions for support of said plurality of radial ribs, and

(g) a plurality of integral axially extending discrete bumper portions configured and arranged to extend from said rib means and projecting therebeyond and beyond said central hub section to provide resilient shock and sound absorbing bumper surfaces,

said resilient bumper means also receiving and dampening any shock to said carrier received by said wear surface portion.

4,385,853

ARBOR FOR ROTARY CUTTING TOOL

Robert E. Strange, Grosse Pointe Woods, and Charles F. Morris, Flint, both of Mich., assignors to Jancy Engineering Co., Davenport, Iowa

Filed Feb. 9, 1981, Ser. No. 232,865
Int. Cl.³ B23B *51/04*
U.S. Cl. 408—68 **5 Claims**

1. An arbor for a rotary cutting tool comprising:

(a) an elongated cylindrical shank having a rear end constructed for attachment to the drive spindle of a drive motor, and having a bore formed axially therethrough;

(b) a support bracket with means for fixedly securing the bracket to a mounting member;

(c) a carrier sleeve guide bushing rotatably mounted in said

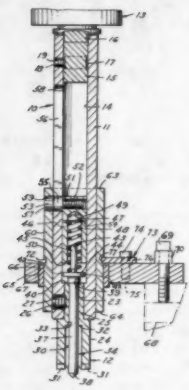
support bracket and slidably receiving and supporting said shank for axial sliding movements therethrough;

(d) retainer means carried on said support bracket and engaging said carrier sleeve guide bushing to hold it in place axially while allowing it to rotate;

(e) a piston having a rear end and a front end, slidably mounted in the bore in said shank, toward the front end of the shank, and having an axial bore extending axially inward from the front of the piston;

(f) means releasably securing said piston to said carrier sleeve guide bushing;

(g) an annular hole cutting tool releasably secured in the front end of said shank, and having an axial bore formed



therethrough and communicating with the bore in said shank;

(h) a pilot member slidably mounted in the axial bore in said cutting tool and having a rear end and a front end;

(i) a plunger means movably mounted in the bore in said arbor shank and having one end thereof in abutting engagement with the rear end of said pilot member;

(j) spring means mounted in the axial bore in the piston and engaging the plunger means for biasing the pilot member front end to a position projecting outwardly of the cutting tool; and,

(k) means for limiting the axial movement of said shank relative to said carrier sleeve guide bushing during a hole cutting operation.

4,385,854

COLLET CHUCK ASSEMBLY FOR TAPS

Eiji Miyakawa, Tokyo, Japan, assignor to Miyakawa Industry Co., Ltd., Seki, Japan

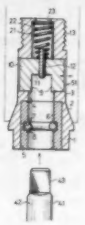
Filed Jul. 29, 1980, Ser. No. 173,407

Claims priority, application Japan, Aug. 21, 1979, 54-106436; Aug. 24, 1979, 54-108467

Int. Cl.³ B23B *31/08*; B23G *1/46*

U.S. Cl. 408—127 **10 Claims**

1. A collet chuck assembly for a tap, each tap including a base end, a prismatic portion adjacent to the base end and a columnar portion adjacent the prismatic portion, the columnar portion having a diameter; said collet chuck assembly comprising a cylindrical body having a nut portion, a frusto-conical portion, cylindrical portion, a center axis, opposite ends, a bore extending along said center axis from one end of said body through said nut portion, said frusto-conical portion and partially into said cylindrical portion, an opening extending along said center axis from the other end of said body to a point partially into said cylindrical portion, and a lateral through-hole extending perpendicular to said center axis through said cylindrical portion intercepting both said bore and said opening, said bore having an inner wall and a diameter larger than the diameter of the columnar portion of the tap; at least one O-ring having an inner diameter less than the diameter of the columnar portion of the tap and removeably mounted in said inner wall of said bore so that said inner diameter extends into said bore for floatingly supporting the columnar portion of an inserted tap in directions perpendicular to said center axis; a moveable member slideably inserted in said lateral through-hole and being moveable in the axial and rotational directions,



said moveable member having a locking recession therein facing said bore defining a pair of locking faces adapted to locking hold the prismatic portion of the tap from rotation; and control means mounted in said moveable member for interacting with the base end of the tap to control a degree of insertion of the tap into the collet chuck assembly, said control means being a set screw having a point end threadingly inserted through said moveable member so that the point end abuts against a base end of an inserted tap.

4,385,855

HOBBING MACHINE

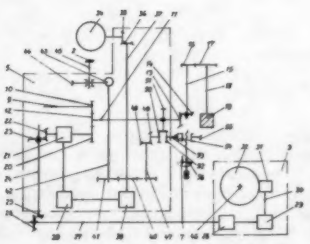
Heinz Papistok, Karl-Marx-Stadt, and Herbert Reuter, Weissbach, both of German Democratic Rep., assignors to Veb Werkzeugmaschinenkombinat "7.Oktober" Berlin, Berlin, German Democratic Rep.

Filed Oct. 27, 1980, Ser. No. 201,318

Claims priority, application German Democratic Rep., Oct. 29, 1979, 216518

Int. Cl.³ B23F *5/22*

U.S. Cl. 409—24 **3 Claims**



1. A hobbing machine for manufacturing spur gears or worm gears, comprising a table housing including a work table rotatable about an axis, an indexing gear system for driving said table; a stationary stand spaced apart from said table housing; a carriage supported on said stand for movement parallel to said axis; a hob slide arranged on said carriage for movement transversely to said axis and supporting a hob spindle; said carriage further including a hob driving gear system driven by a motor and being coupled to said hob spindle, a feed driving system driven by a separate motor and being selectively connected to said stand for feeding said carriage in the axial direction or to said slide to feed the same in said transverse direction, and a differential system coupled to said hob driving system and including a differential and differential change

gears for coupling said hob driving system to said feed driving system; and said indexing gear system including indexing change gears arranged in said work table housing and being coupled to said differential system via transmission means arranged in said stand.

4,385,856

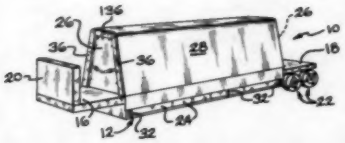
APPARATUS FOR TRANSPORTING PLANAR MATERIALS

John L. O'Neal, 24982 Thompson Rd., Perrysburg, Ohio 43551

Filed Apr. 27, 1981, Ser. No. 257,817

Int. Cl.³ B60P 7/10; B61D 3/16, 45/00

U.S. Cl. 410—34 **11 Claims**



1. An apparatus for transporting planar sheets of material in a substantially vertical position comprising, in combination, a plurality of rigid A-frame members disposed in parallel, fixed, spaced-apart relationship, said A-frame members having two inclined legs and an outwardly extending support beam secured to the lower portion of each said legs of said A-frame members, moveable means for engaging said outwardly extending support beams at a selected location along their length, a cargo strap secured between the top of one of said A-frame members and a respective one of said moveable beam engaging means, means for tightening said cargo strap, a pair of longitudinal rails extending between and secured to adjacent pairs of said A-frame members, at least one longitudinally translatable transverse beam, means for removably securing said transverse beam on said pair of longitudinal rails, and means for moving said transverse beams longitudinally along said rails for securing said planar sheets of material.

8. An apparatus for transporting planar sheets of material in a substantially vertical orientation comprising, in combination, a plurality of rigid A-frame members disposed in parallel, fixed, spaced-apart relationship, said A-frame members having two inclined legs and an outwardly extending support beam secured to the lower portion of each said legs of said A-frame members, moveable means for engaging said outwardly extending support beams at a selected location along their length, at least one cargo strap secured between a first location at the top of one of said A-frame members and a first location on a respective one of said moveable beam engaging means, a second location on means for transversely restraining said cargo strap at a third location on said one of said A-frame members between said first and said second locations, means for tightening said cargo strap, a pair of longitudinal rails extending between and secured to adjacent pairs of said A-frame members, at least a pair of longitudinally translatable transverse beams, means for removably securing said transverse beams on said pair of longitudinal rails and means for moving said transverse beams longitudinally along said rails for securing said planar sheets of material.

4,385,857

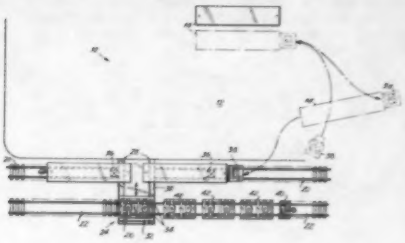
INTERMODAL TRANSPORT SYSTEM

Elwood H. Willetts, 102 S. Penatsquit Ave., Bay Shore, N.Y. 11706

Continuation-in-part of Ser. No. 32,867, Apr. 24, 1979, abandoned, Ser. No. 72,072, Sep. 4, 1979, abandoned, and Ser. No. 143,354, Apr. 14, 1980, abandoned. This application Jan. 23, 1981, Ser. No. 227,556

Int. Cl.³ B61D 3/12; B61F 3/14, 5/26, 5/30

U.S. Cl. 410—53 **1 Claim**



1. An intermodel transport system capable of use with relatively low-profile rail car technology and including a plurality of semi-trailer containers having vertically extending receptacle insert means disposed below the floor thereof near each opposite end thereof for cooperative mating engagement with rail means defined below, said system comprising, in combination: a tandem axle rail support truck for supporting adjacent ends of said trailer containers in substantially torsion-free rail train formation, and system terminal interchange means for engaging said trailer containers with highway and rail support means, said rail support truck including a cross bolster therein, suspension spring means for directly supporting said bolster, at least one centerplate in said bolster, and an integral kingpin upstanding substantially vertically with respect to said centerplate for cooperative engagement with said receptacle inset means, a rail support truck including flanged wheels and roller bearing journal boxes on each end of axles thereof, a bolster supported by both of said axles, a load-deflective spring means interconnecting said bolster with the tops of both journal boxes on each transverse side of said truck, far bottom corners of said journal boxes on each trans-verse side being interconnected by a flat leaf spring, and at least one centerplate with an integral upstanding kingpin supported by said bolster, said load-deflective spring means comprising an elastomer bondedly stressed in torsional shear and reacting on oppositely extending torque beams interconnecting said bolster and the top of said journal boxes on each transverse side of said rail support truck, an elastomeric collar bondedly disposed substantially concentrically within said torsionally stressed elastomer and concentrically surrounding an attachabale hub shaft of said spring means, and further including a friction damper comprising an arm extending oppositely from one of said oppositely extending torque beams, and cooperative friction surfaces interposed between said arm and said oppositely extending beam, whereby all three basic modes of rail impact forces including vertical, transverse and horizontal forces, are substantially isolated from said bolster.

4,385,858

ATTACHMENT CLIP

Ted A. Bell, Coshocton, Ohio, assignor to Pretty Products, Inc., Coshocton, Ohio

Filed Sep. 29, 1980, Ser. No. 192,106

Int. Cl.³ F16B 37/04

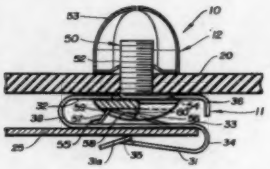
U.S. Cl. 411—112 **22 Claims**

1. An attachment clip for securing of an article to a sheet-form support element comprising

a fastener element having an elongated shank adapted to be

projected through an article to be thereby secured to a support element, a relatively enlarged head carried by said shank and securing means selectively positionable on said shank in mechanically secured engagement to maintain an article on said shank, and

a clip adapted for cooperative mechanical interengagement with said fastener element and a sheet-form support structure for mounting of said fastener element on the support structure in a predetermined relative position, said clip having first, second and intermediate legs extending in superposed relationship with respect to each other, each of said first and second legs mechanically secured to said intermediate leg and disposed at relatively opposite sides



thereof, said first leg being resiliently biased toward said intermediate leg to effect a clamping engagement with a sheet-form support structure inserted therebetween, said second leg adapted to engage with the head and shank of said fastener element to retain said fastener element in mechanically secured relationship with said clip with said fastener element head disposed between said second and intermediate legs, said second leg having an aperture formed therein through which the elongated shank of said fastener element projects, said clip including a resilient tongue operatively engageable with said fastener element to exert a biasing force against said fastener element to maintain the head thereof against said second leg and in relatively fixed relationship to said second leg.

4,385,859

STORAGE INSTALLATION PERMITTING THE AUTOMATIC SELECTION AND REMOVAL OF ARTICLES

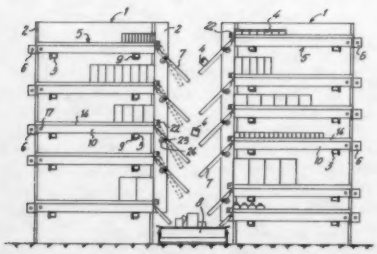
Willy P. M. Goossens, Zeedijk, 19, B-8380 Zeebrugge, Belgium

Filed Sep. 24, 1980, Ser. No. 190,382

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1979, 2938757; Belgium, Sep. 30, 1980, 201966

Int. Cl.³ B65G *1/33, 65/00*

U.S. Cl. 414—267 **12 Claims**



1. Storage installation permitting the automatic selection and removal of articles stored at different levels on carrying elements of one or more shelf units, each carrying element being fitted with a device for transporting the articles, and the articles removed in this way being grouped and moved by a common transporting means towards a central packaging and distributing station, characterized in that each carrying element (5) comprises a substantially U-shaped body (10) which is closed by a profiled cover or plate (11) provided with longitudinal grooves in the vertical plane (12) and in the horizontal plane (13) so as to be able to carry out modular assembly of the transporting paths, adapted to the dimensions of the articles, and an individual and self-governing control member (6) for actuating the device for transporting the articles to be removed.

4,385,860

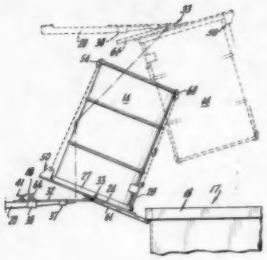
FORK LIFT ATTACHMENT

Richard W. Corbin, 1538 Dover Rd., Mohegan Lake, N.Y. 10547

Filed Jan. 12, 1981, Ser. No. 224,602

Int. Cl.³ B65G *65/23*

U.S. Cl. 414—420 **10 Claims**



1. A receptacle handling and dumping device for use with a fork lift truck including a motor driven vertically movable longitudinally forwardly projecting lift member and a receiver container having a top opening and an outwardly projecting trip defining upper member, said device comprising:

coupling means releasably engaging said lift member and extending at least to the forward end of said lift member;

a receptacle supporting tilt member positioned above and connected to the forward portion of said coupling means for swinging about a transverse axis between a retracted upright and an inverted position;

an actuating member positioned at the forward end of said tilt member and movable therewith; and

means for releasably anchoring to said tilt member an upright receptacle located thereon, such that the center of gravity of said receptacle is rearwardly displaced from said transverse axis, whereby upon the movement of said lift truck to bring said actuating member to a position underlying said trip and the raising of said lift member, the rising of said actuating member is restricted to thereby swing said tilt member forwardly about said transverse axis so that the center of gravity of said receptacle moves forwardly of said transverse axis such that said receptacle pivots about said transverse axis and freely rotates to an inverted position below said lift member.

4,385,861

LOAD HANDLING APPARATUS

Michael I. Blatchford, Radstock, nr. Bath, England, assignor to Ralph Blatchford & Company Limited, Avon, England

Filed Nov. 28, 1980, Ser. No. 211,293

Claims priority, application United Kingdom, Nov. 30, 1979, 7941436

Int. Cl.³ B60P *1/54;* B66C *7/10*

U.S. Cl. 414—542 **9 Claims**

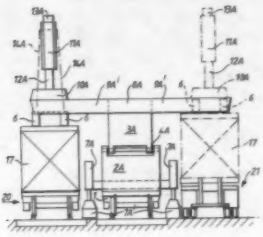
1. Load-handling apparatus including a vehicle and means mounted on the vehicle for raising and lowering a load and for moving the load laterally of the vehicle, wherein:

(i) the said means comprises two spaced load-handling structures each of which when in an operative position is essen-

tially upright and has at least one track member extending essentially horizontally and laterally of the vehicle;

(ii) each load-handling structure comprises a base member, which is essentially upright in the operative position, with each track member extending from the upright base member;

(iii) each base member is movable from the upright operative



position down into an inoperative position in which it extends lengthwise of the vehicle;

(iv) each track member is mounted on the respective base member in such manner that each track member is movable from the operative position to the inoperative position in which latter position each track member extends lengthwise of the vehicle and of the respective base member.

4,385,862

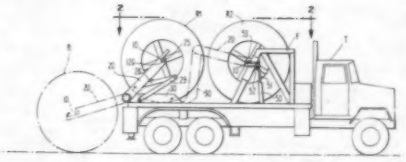
REEL LOADER

Arthur K. McVaugh, 2009 Old Sumneytown Pike, Harleysville, Pa. 19438

Filed Aug. 19, 1981, Ser. No. 294,351

Int. Cl.³ B60P 1/48

U.S. Cl. 414—555 **10 Claims**



9. Truck mounted apparatus for lifting and lowering cable reels onto and from the bed of a flatbed truck, and for transferring such reels between first and and second positions on said truck bed, said apparatus comprising:

a. a pair of lift arms, one on each side of said truck, each lift arm having a recess at its outward end portion for receiving one end of the axle of a cable reel;

b. transverse shaft means interconnecting the inward ends of said lift arms;

c. a pair of transfer arms, one on each side of said truck;

d. said transverse shaft means also interconnecting the inward ends of said transfer arms;

e. four pairs of link arms, two pairs on each side of said truck, one end of the arms of each pair being connected pivotally together at a common pivot point, one free end of each pair of link arms being connected to said lift arm, the other free end of each pair being connected to said transfer arm, the common point ends of said link arms being interconnected by a pivot pin;

f. a first pair of hydraulic rams, one on each side of said truck, each comprising a cylinder and a piston connected between said transverse shaft means and said pivot pin at the common point ends of link arms; and

g. a second pair of hydraulic rams, one on each side of said truck, each comprising a cylinder and a piston connected between a fixed pivot point on said truck and a pivot point on said transfer arm.

4,385,863

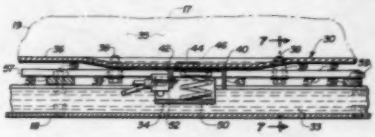
SEAT INTERLOCK FOR SKID-STEER LOADER

Ray C. Minor, Leola, Pa., assignor to Sperry Corporation, New Holland, Pa.

Filed May 13, 1981, Ser. No. 263,328

Int. Cl.³ E02F 3/32

U.S. Cl. 414—699 **9 Claims**



1. In a loader having a mobile frame, including upwardly extending, laterally spaced sidewalls and a floor member extending between said sidewalls; a fore-and-aft extending boom structure pivotally mounted on said frame and including a pair of boom arms moveable along a generally vertical path adjacent said sidewalls; first power means operatively associated with said boom structure for moving said boom arms along said path of movement; and an operator's seat mounted on said floor member and having aseat frame supporting a seat cushion affixed thereto, the improvement comprising:

said seat frame having a first member connected to said loader frame and a second member spaced above said first member and vertically moveable relative thereto, said second member being affixed to said seat cushion and moveable between a first position adjacent said first member and a second position spaced from said first member, said second seat frame member being connected to said first seat frame member by a plurality of bolts slidably received through said first seat frame member, said bolts defining first and second spaced apart lines;

spring means positioned between said first and second seat frame members to bias said second member away from said first member, said spring means being further positioned between said first and second lines of bolts such that said first line of bolts is forwardly of said spring means and said second line of bolts is rearwardly of said spring means;

power interruption means operatively associated with said first power means to selectively cause said first power means to become inoperative and prevent said boom structure from being moved vertically, said power interruption means being selectively positionable between a first operative condition in which said first power means is free to operate within interruption by said power interruption means to vertically move said boom structure and a second operative condition in which said first power means is rendered inoperative to vertically move said boom structure; and

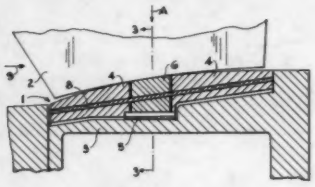
switching means disposed between said first and second seat frame members and operatively connected to said power interruption means to sense the position of said second seat frame member relative to said first seat frame member and operatively control the position of said power interruption means betweein said first and second operative conditions in response to the position of said second member relative to said first member, so that said power interruption means is positioned in said first operative condition when said second seat frame member is in said first position and in said second operative condition when said second member is in said second position.

4,385,864

SEALING DEVICE FOR THE FREE ENDS OF VARIABLE STATOR VANES OF A GAS TURBINE

Anton Zacherl, Munich, Fed. Rep. of Germany, assignor to Motoren und Turbinen Union Munchen GmbH, Munich, Fed. Rep. of Germany

Filed Jul. 28, 1980, Ser. No. 173,235
Claims priority, application Fed. Rep. of Germany, Aug. 4, 1979, 2931766
Int. Cl.³ F01D 11/08
U.S. Cl. 415—136 5 Claims



1. A sealing device for sealing the free ends of vanes of a variable stator of a gas turbine, the gas turbine also having a stator section, said sealing device comprising:

(a) a sealing ring extending around the periphery of the stator section and located between the stator section and the free ends of the vanes, the sealing ring being formed of individual segments arranged one behind the other in the circumferential direction of the stator, the segments being movable radially relative to each other, and each sealing ring segment having a face opposed to a face of an adjacent sealing ring segment,

(b) means for providing a seal between each two adjacent sealing ring segments, said means including a projection extending from one opposed face of a sealing ring segment toward another opposed face of an adjacent sealing ring segment and a correspondingly shaped recess in the other opposed face accommodating the projection with a clearance, a groove in each opposed face of the ring segments, each groove having a depth at least as great as the length of the projection or the depth of the recess, and a flat plate within each two opposed grooves, and

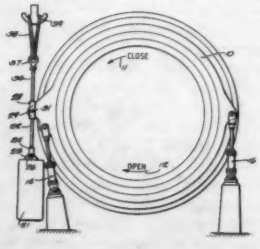
(c) means for applying resilient pressure in a radially outward direction to the sealing ring segments so as to press the radially outer faces of the segments against the free ends of the vanes, thereby forming a seal.

4,385,865

COUNTERACTING LUG AND LIFTING FIXTURE FOR THE COUNTERWEIGHT OF A BULB TURBINE

Thomas R. Schucker, York, Pa., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Nov. 3, 1980, Ser. No. 202,881
Int. Cl.³ F01D 17/16
U.S. Cl. 415—150 2 Claims



1. An apparatus for rotating a wicket gate operating ring of a bulb turbine machine where said ring is rotatable about its axis in a rotational direction to an open position and further rotatable in a counterrotational direction to a closed position, the apparatus comprising in operable combination:

primary means for rotating said ring between said open and closed position; and

secondary closing means for rotating said ring to said closed position wherein said primary means comprises servomotors operable to rotate said ring between said open and closed positions; said secondary closing means comprises a counterweight having a link rod pivotally attached to said counterweight and extending upwardly therefrom to a free end; a coupling rigidly secured to said free end with said coupling pivotally secured to a radially extending abutment on said gate operating ring with said counterweight providing a constant downward force at said pivotal connection sufficient to urge said ring to said closed position when said servomotors are inoperable; and

secondary opening means rotating said ring to said open position

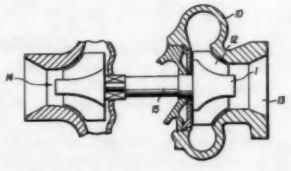
comprising a lifting lug rigidly secured to said pivotally connected coupling and extending upwardly therefrom to a free end and means for securing said free end to means for applying a lifting force to said lifting lug.

4,385,866

CURVED BLADE ROTOR FOR A TURBO SUPERCHARGER

Toshihiko Ochiai, Yokosuka; Kiyoshi Nakamura, Yokohama; Katsutoshi Nishida, Yokohama, and Masato Sakai, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Mar. 17, 1980, Ser. No. 131,278
Claims priority, application Japan, Aug. 2, 1979, 54/98094
Int. Cl.³ F01D 5/28
U.S. Cl. 416—241 B 9 Claims



1. A curved blade rotor for a radial inflow turbo supercharger having a casing including a curved portion, said rotor comprising:

a ceramic material having a plurality of curved blades extending therefrom, each of which have a curved outer edge bordering with, and closely corresponding to, said curved portion of said casing, only said curved outer edge being machine finished to a surface roughness of 0.8S to 2S wherein "S" indicates surface roughness according to Japanese Industrial Standard B 0601, the remainder of the surface of said rotor not being machine finished.

4,385,867
APPARATUS FOR POSITIONALLY FIXING A DRIVE SHAFT DISPOSED IN A FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

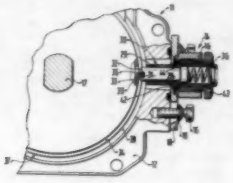
Max Straubel; Reinhard Schwartz; Ernst Ritter, and Ilija Djordjevic, all of Stuttgart, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 5, 1980, Ser. No. 213,711

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1979, 2949100

Int. Cl.³ F04B *21/00*

U.S. Cl. 417—63 **11 Claims**



1. An apparatus for positionally fixing a drive shaft disposed in a fuel injection pump for internal combustion engines in a predetermined rotary position relative to the onset of fuel supply, a position fixing apparatus fixed relative to a pump housing, said apparatus further including a holder element which is adapted to protrude out of said apparatus housing, said holder element associated with a pin means for axial displacement thereof, and means cooperating with said drive shaft by means of which said drive shaft may be held in said predetermined rotary position, characterized in that said means cooperating with said drive shaft is firmly connected with said drive shaft, said means further including an angle-indicator means for positionally fixing said drive shaft, said angle-indicator means further including cooperative means which is inserted into said apparatus housing whereby the predetermined rotary position of the drive shaft may be ascertained.

4,385,868
SYSTEMS FOR EVACUATING PROCESS FLUIDS HAVING CONDENSABLE AND INCONDENSABLE COMPONENTS

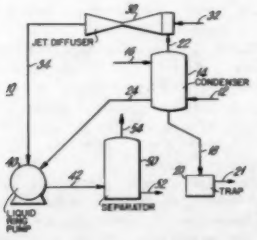
Stephen J. King, Clearwater, Fla., assignor to Nash Engineering Company, Norwalk, Conn.

Continuation-in-part of Ser. No. 95,760, Nov. 19, 1979, Pat. No. 4,315,717. This application Aug. 26, 1980, Ser. No. 181,463

The portion of the term of this patent subsequent to Feb. 16, 1999, has been disclaimed.

Int. Cl.³ F04C *19/00*

U.S. Cl. 417—69 **7 Claims**



1. A system for evacuating process fluid from a process fluid source, the process fluid having condensable and incondensable components comprising:

a source of condensing fluid at a temperature substantially lower than the temperature of the process fluid at the process fluid source;

condenser means for condensing at least a portion of the condensable component of the process fluid by heat exchange with the condensing fluid while keeping the process fluid and the condensing fluid physically separate from one another, the condenser means having a process fluid inlet connected to the process fluid source, a condensing fluid inlet connected to the condensing fluid source, a condensate outlet for discharging the portion of the condensable component condensed by the condenser means, an uncondensed process fluid outlet for discharging the portion of the process fluid not condensed by the condenser means, and a condensing fluid outlet for discharging the expended condensing fluid;

means connected to the condensate outlet of the condenser means for discharging the condensate from the system;

a source of atmospheric air;

jet diffuser means having a suction inlet connected to the uncondensed process fluid outlet of the condenser means and a motivating fluid inlet connected to the atmospheric air source for mixing the uncondensed process fluid with atmospheric air to dilute the uncondensed process fluid and increase its pressure and for passing the resulting diluted process fluid to an outlet of the jet diffuser means; and

liquid ring pump means having a suction inlet connected to the diluted process fluid outlet of the jet diffuser means for further increasing the pressure of the diluted process fluid and for discharging it from the system.

4,385,869
RECIPROCATION PUMP

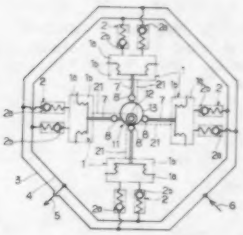
Katsumori Omata, Higashimurayama, Japan, assignor to Far East Engineering Co., Ltd., Japan

Filed Oct. 20, 1980, Ser. No. 198,644

Claims priority, application Japan, Jun. 28, 1980, 55-88394

Int. Cl.³ F04B *35/00, 1/04*

U.S. Cl. 417—271 **3 Claims**

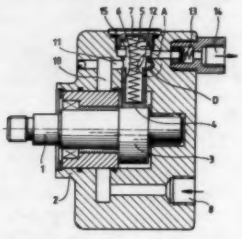


1. A reciprocation pump having a plurality of radially arranged reciprocative pumping chambers each provided with a working member and operatively connected to an external liquid absorbing pipe and an external liquid discharging pipe, and a central drive mechanism, said central drive mechanism comprising drive members directly connected to the working members of the radially arranged reciprocative pumping chambers respectively, said drive members being transversely arranged shafts each provided with a pair of abutments, and a valve structure operated in association with the drive members by a pressure activated fluid, said valve structure being so formed as to send the pressure activated fluid into and out of the pump simultaneously during operation thereof, and comprising a rotary fluid switching valve and a cam disc which is coaxial with the former and rotatably driven by the reciprocation movements of said abutments.

4,385,870
RADIAL PISTON PUMP

Johann Merz, Bopfingen, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, AG., Friedrichshafen, Fed. Rep. of Germany

Filed Feb. 18, 1981, Ser. No. 235,594
Claims priority, application Fed. Rep. of Germany, Mar. 6, 1980, 3008575
Int. Cl.³ F04B 1/04
U.S. Cl. 417—273 7 Claims

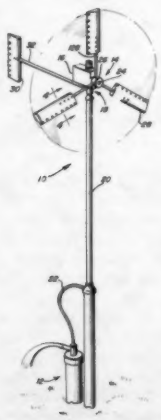


1. In a radial piston pump having a piston (4) undergoing a fluid displacing stroke against a spring bias in a piston bore (6) formed in a pump housing (2) within which an intake passage (11) is formed from which fluid is displaced by the piston into a pressure chamber (12) and discharged therefrom during a compression phase of the stroke through a check valve (13), the improvement residing in means for minimizing fluid leakage along a sealing surface portion (15) in the piston bore between the intake passage and the pressure chamber, including a fluid pressure zone (D) sealed from the intake passage by the piston during the compression phase and to which the piston is exposed within the bore in opposing relation to the intake passage, and means for pressurizing said pressure zone during the compression phase to take up radial play between the piston and the sealing surface portion.

4,385,871
WIND DRIVEN AIR PUMP

Victor A. Beisel, R.R. #1, Fargo, Okla. 73840

Filed Feb. 3, 1981, Ser. No. 231,058
Int. Cl.³ F04B 17/00, 17/02, 35/00
U.S. Cl. 417—334 6 Claims

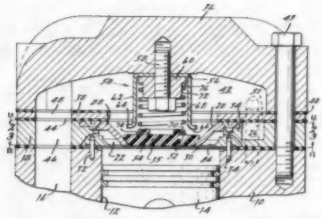


1. A pump for retrieving water from an underground source comprising in combination: a wind motor including a rotatable shaft, compressor means to compress air by rotation of said shaft, compressed air delivery means associated with said compressor and communicating with said source of underground water, a water delivery means associated with said source of underground water for delivering said water to the surface, a hub secured to said rotatable shaft and a plurality of generally radial propeller blades mounted from said hub, a tail blade stationarily mounted relative to said compressor and operable to face said blades into the wind, each of said propellor blades being air foil shaped and including a pair of opposed air foil shape sides defining a space therebetween, the opposite ends of said blades being open, said blades being joined to said hub by generally radial support rods, each of said support rods securing one of said blades to said hub, a swivel assembly positioned between said air motor and said air delivery means whereby said wind motor is movable in order to extract the maximum energy from the wind, said swivel assembly including a base member attached to said compressor means and an air passage communicating with the compressed air discharged from said compressor means, said base member having a cavity therein supporting a hollow swivel communicating with said air passage and said air delivery means, said cavity further housing a bearing which allows said base member to rotate relative to said swivel, said bearing being positioned between a pair of spaced ring members surrounding said swivel, said cavity including an air seal to prevent compressed air from escaping between said swivel and base member, said tail blade being supported from a tail support rod stationarily mounted relative to said housing, a check valve positioned between said swivel and said air delivery means, whereby the pressure of air from said compressor can be regulated before entering said air delivery means.

4,385,872
COMPRESSOR

Robert L. Anderson, De Graff, Ohio, assignor to Copeland Corporation, Sidney, Ohio

Filed Jan. 22, 1980, Ser. No. 114,346
Int. Cl.³ F04B 21/02, 39/10
U.S. Cl. 417—571 6 Claims



1. A valve plate for a compressor pumping chamber, said valve plate comprising:

a relative flat body having a planar bottom surface lying in a first plane and a raised continuous ridge disposed about its periphery, the upper surface of said ridge lying in a second plane parallel to said first plane;

means defining at least one gas flow opening through said body through which gas is adapted to pass to and from a single pumping chamber;

a plurality of pads integrally formed on said body around each said opening, the upper surface of each said pad lying in a common plane disposed between the planes of said bottom surface and ridge;

an insert for each said opening having a mounting flange disposed on a plurality of said pads, said insert being affixed to said body and including a downwardly and inwardly extending wall projecting into said opening,

the outer surface of said wall defining with said opening

an annular suction passage and the inner surface of said wall defining a discharge passage; and

means defining a discharge valve seat on said inner surface of said insert wall.

4,385,873

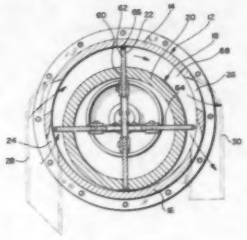
ROTARY VANE TYPE PUMP OR MOTOR AND THE LIKE WITH CIRCULAR CHAMBER PORTIONS

Hans H. Richter, 258W. Shore Rd., Warwick, R.I. 02889

Filed Oct. 7, 1980, Ser. No. 194,805

Int. Cl.³ F01C *1/00, 21/10, 21/16*

U.S. Cl. 418—23 **3 Claims**



1. A rotary vane apparatus having a housing including a stator chamber in which a rotor including at least a pair of double sliding vanes is adapted to rotate in said chamber wherein the rotor axis is eccentrically displaced in said chamber and said vanes oscillate during rotation, the improvement comprising:

a pair of opposed substantially semi-cylindrical shells each having a portion of a true circular internal surface compositely forming said stator chamber wherein a diametrical chordal segment of said shells has been removed so as to form said chamber in an overall noncircular configuration but having true circular portions;

means restraining the vanes against centrifugal force imparted to said vanes, said means including;

a pair of circular race rings having opposed open ends disposed within said rotor at opposite sides thereof;

crank means carrying said race rings for rotation; and

said vanes having guide means at opposite sides thereof contacting said race rings;

whereby the oscillatory motion of said vanes is limited.

4,385,874

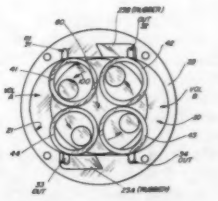
ROTARY PUMP APPARATUS WITH PLURAL ABUTTING PUMPING SEGMENTS

Hilbert J. Savoie, Jr., P.O. Box 98, Boutte, La. 70039

Filed May 1, 1980, Ser. No. 145,672

Int. Cl.³ F04C *2/00, 5/00*

U.S. Cl. 418—56 **31 Claims**



1. A rotary pump apparatus with plural abutting pumping segments comprising:

a. a housing having an inner pumping chamber portion;

b. input means communicating with said chamber for allowing a fluid stream to be pumped to enter said chamber;

c. output means communicating with said chamber for discharging fluids from said chamber;

d. a plurality of separate abutting segments movably mounted within said chamber in a circulating rotary fashion, said segments during operation driving fluids from said input means through said chamber to said output means, each of said segments abutting at least two segments during pumping through said chamber;

e. powered driving means for circulating said plurality of segments in a rotary fashion within said chamber, said driving means comprising:

i. a rotary plate;

ii. a plurality of metal pegs fixedly attached to one surface of said plate;

iii. a shaft fixedly attached to a second surface of said plate, said shaft and plate each defining a common rotational axis;

iiii. a means for circulating the shaft.

4,385,875

ROTARY COMPRESSOR WITH FLUID DIODE CHECK VALUE FOR LUBRICATING PUMP

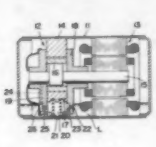
Takaki Kanazawa, Fuji, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

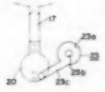
Filed Jul. 21, 1980, Ser. No. 170,918

Claims priority, application Japan, Jul. 28, 1979, 54-96381; Jul. 28, 1979, 54-96382; Dec. 21, 1979, 54-166355

Int. Cl.³ F04C *18/00, 29/02;* F15C *1/16*

U.S. Cl. 418—63 **1 Claim**





1. A rotary compressor, comprising:

a sealed horizontal casing;

a hollow cylinder secured to an inner surface of said casing;

two end plates secured to both ends of said cylinder;

a roller eccentrically rotatable within said cylinder;

shaft means for rotating said roller;

a closed chamber radially extending through said cylinder, said chamber being defined by lower portions of said end plates, said end plates being made from a single piece of metal plate;

a blade in contact with an outer surface of said roller to reciprocate in said closed chamber, the axial width of said chamber being defined by said two end plates;

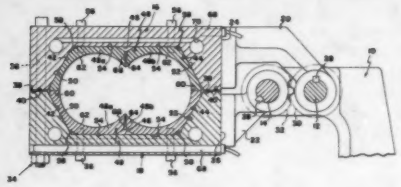
suction and discharge passages provided through said end plates for sending a lubricant contained in a bottom portion of said casing outside of said closed chamber into and out of said closed chamber; and

a fluid diode type check valve provided in said suction passage, said check valve being press formed integrally with said metal plate.

4,385,876
SPLIT WEAR LINER FOR TWIN BORE BARREL ASSEMBLY

Clarence K. Scherping, Saginaw, and Wesley J. Parth, Frankenmuth, both of Mich., assignors to Baker Perkins Inc., Saginaw, Mich.

Filed May 31, 1978, Ser. No. 911,183
Int. Cl.³ F01C 21/10; B03B 3/00; B29B 1/10
U.S. Cl. 418—201 10 Claims

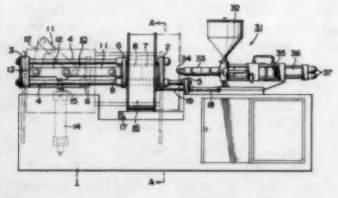


4. In a barrel assembly for a twin screw mixer or the like having a frame, twin screw shafts, a pair of separable elongate housing blocks mounted upon said frame and detachably clampable to each other in an opposed closed position, and a pair of like, unitary, elongate liner halves detachably mounted in said housing blocks having elongate connected parallel bores to receive the respective screw shafts therein cooperable when said housing blocks are clamped in said closed position to define a twin screw receiving chamber having saddles between the bores; the improvement wherein said housing blocks have internal first elongate faces disposed in facing opposed relationship to each other when said blocks are in said closed position, each of said first faces having a liner half receiving recess therein defined by opposite longitudinally extending flat side walls convergently inclined inwardly from said first face and an elongate flat inner wall extending between the side walls to form a chamber of expanded hexagonal cross section, each of said liner halves having external surfaces with convergent flat faces complementary to said side walls of said recess and engageable therewith in face-to-face relationship when the liner half is seated in said recess, each of said liner halves also having an external surface connecting said convergent flat faces and comprising flat faces which are complementary to and engaged with said inner flat wall, said liner halves having mating face surfaces extending longitudinally along each side of the screw receiving recesses engageable with face-to-face abutment with each other when said halves are seated in said housing blocks and said blocks are in their closed position.

4,385,877
INJECTION MOLDING APPARATUS

Norihiko Tanabe, No. 21-18, Yako 3-Chome, Tsurumi-Ku, Yokohama City, Kanagawa Pref., Japan

Filed Dec. 17, 1981, Ser. No. 331,561
Claims priority, application Japan, Dec. 23, 1980, 55/183061
Int. Cl.³ B29F 1/06
U.S. Cl. 425—3 11 Claims

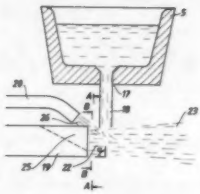


1. An injection molding apparatus comprising: a mold for an injection molding process; means to enable opening and closing of said mold; an annular magnetic coil for generating a magnetic field and disposed to enclose the outer periphery of said mold; and means to move said magnetic coil in directions related to the open and closed positions of said mold, characterized in that said mold has its outer periphery enclosed by said magnetic coil when said mold is closed and is clear of said magnetic coil when said mold is open.

4,385,878
APPARATUS FOR MANUFACTURING A METAL POWDER BY GRANULATION OF A METAL MELT

Hans G. Larsson, and Erik Westman, both of Västeras, Sweden, assignors to ASEA Aktiebolag, Västeras, Sweden

Division of Ser. No. 58,766, Jul. 19, 1979, abandoned. This application Jan. 18, 1980, Ser. No. 113,309
Claims priority, application Sweden, Jul. 21, 1978, 7808028
Int. Cl.³ B01J 2/02
U.S. Cl. 425—7 6 Claims



1. An apparatus for granulating a molten metal comprising
(a) a closed housing forming a granulating section and a collecting section;
(b) a casting box having a bottom orifice positioned in said granulating section and containing the molten metal, such that at least one tap stream of falling molten metal is discharged from said orifice;
(c) at least one primary gas ejector means having a groove-shaped discharge orifice positioned in said granulating section such that a groove-shaped gas jet issuing therefrom will intersect the side of a tap stream at a high velocity and produce droplets of the molten metal which will be projected towards and into said collecting section wherein the will become cooled and form solid metal granules,
(d) at least one secondary gas ejector means positioned in said granulating section for issuing one or more auxiliary gas jets directed in the same general direction and obliquely downwardly toward the bottom of a groove-shaped gas jet issuing from an associated primary gas ejector means and toward an associated tap stream;
(e) recovery means positioned in said collecting section for removing the solid metal granules produced therein; and
(f) gas supply means for supplying gas to said primary and secondary gas ejector means.

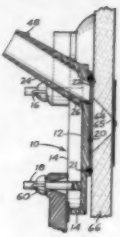
4,385,879
REPAIR OF GLASS PANEL

Kenneth L. Wilkinson, 14875 SW. 79th, Tigard, Oreg. 97223

Continuation of Ser. No. 893,751, Apr. 5, 1978, abandoned. This application Nov. 16, 1979, Ser. No. 94,944
Int. Cl.³ B32B 35/00; B29F 5/00
U.S. Cl. 425—12 7 Claims

1. Apparatus for repairing a damaged area in a glass panel comprising,
a frame and securing means for detachably securing the frame to one side of the panel with the frame overlying the damaged area in the panel and with the securing means located on said one side of the panel.
said frame including means forming a face expanse which, with the frame in operative position secured to the glass panel, lies opposite the glass panel, said means forming a

face expanse including an annular sealing portion forming the peripheral boundary of the face expanse which sealing portion occupies a plane and is adapted sealingly to engage the glass panel in a region circumscribing and spaced laterally outwardly of the damaged area, said face expanse laterally inwardly of said sealing portion having an opening therein which opening is surrounded by the face expanse and the face expanse inwardly of said sealing portion extending as a smooth surface unbroken save for said opening and which is behind said plane, said frame further



having means defining a passage communicating with said opening, said passage and opening affording an access path for the introduction of hardenable glass repair liquid to said damaged area,

a plug insertable into said passage and means defining a seated position for said plug in said passage, said plug having an end face which fills said opening with the plug in its seated position in said passage, said end face, with the plug in its seated position being a smooth continuation of said face expanse surface and lying over the damaged area and shaping the hardenable repair liquid.

4,385,880

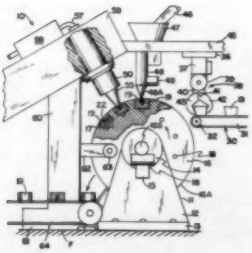
SHOCK WAVE PROCESSING APPARATUS

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation-in-part of Ser. No. 958,514, Nov. 7, 1978, abandoned, which is a continuation-in-part of Ser. No. 93,779, Nov. 30, 1970, Pat. No. 4,207,154, which is a continuation of Ser. No. 668,561, Jun. 27, 1957, abandoned. This application Sep. 10, 1979, Ser. No. 74,388

Int. Cl.³ B29C *3/06, 11/00*

U.S. Cl. 425—77 **18 Claims**



1. An apparatus for applying shock waves to matter comprising:

first means for generating intense shock waves,

second means in the form of a solid member operable for receiving and transmitting shock waves generated by said first means, said second means being operable to transmit shock waves generated by said first means in a given direction therethrough,

third means for retaining a quantity of matter to be processed with energy transmitted thereto by means of said shock waves,

fourth means for relatively moving said second means to bring a portion of said solid member to which said shock waves are transmitted from said first means into and out of engagement with matter supported by said third means which is to be processed with shock waves,

fifth means for controlling the operation of said fourth means to cause said second means to compressively engage matter retained by said third means, means for controlling the operation of said first means in synchronization with the controlled relative movement of said second and third means so as to generate a shock wave upon the compressive engagement of said second means with matter retained by said third means, and

sixth means for removing matter processed by said second means and transfering said processed matter from the vicinity of said second means,

said sixth means and said second means for controlling the operation of said first means being controlled in their operation by said fifth means.

4,385,881

ULTRAHIGH PRESSURE APPARATUS

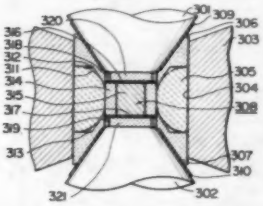
Hiroshi Ishizuka, 19-2 Ebara 6-chome, Shinagawa-ku, Tokyo, Japan

Filed Apr. 8, 1981, Ser. No. 252,177

Claims priority, application Japan, Apr. 18, 1980, 55-50431

Int. Cl.³ B30B *11/32*

U.S. Cl. 425—77 **6 Claims**



1. An ultrahigh pressure apparatus comprising: a pair of opposed frustoconical punches, an annular die whose bore face includes an innermost portion of substantially straight-cylindrical configuration and placed between- and in alignment with the punches, a rigid hollow cylinder placed in circumferential contact with said straight-cylindrical portion of the bore face, gaskets of readily deformable material placed around the conical face of the punches and abutting the cylinder and the outer portion of the bore face of the die on each side of the cylinder, said rigid cylinder having a curved bore face which exhibits, at a radial cross section of the cylinder taken along the axis, a contour selected from quarter-circular and quarter-elliptical contours between each end and the center of said axis, and said cylinder exhibits a diameter at the minimum opening thereof substantially equal to that of the punches at the smaller end thereof.

4,385,882

APPARATUS FOR MANUFACTURE OF CANDY

David A. Cloud; Charles E. Cloud, both of Wilmette; William N. Pearson, Highland Park, and Donn A. Hartman, Gurnee, all of Ill., assignors to Cloud Corporation, Skokie, Ill.

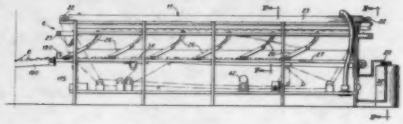
Division of Ser. No. 186,331, Sep. 11, 1980, Pat. No. 4,357,359. This application Nov. 4, 1981, Ser. No. 318,049

Int. Cl.³ A23G *3/12, 3/24;* **B29D** *9/08*

U.S. Cl. 425—91 **12 Claims**

1. An apparatus for manufacture of candy cores comprising reservoir means for heating a mass of toffee including orifice

means for releasing the toffee from said reservoir means, said reservoir means being operable to heat the toffee to a softened temperature sufficient to permit portions of it to be pulled through said orifice means, a candy core forming head for pulling fine strands of toffee from the orifices, said head being



rotatable to wind the strands thereon to form a continuous length of core, said head having means for moving the length of core along its axis off of said head, saw means for sawing an outer end of the length of core with consecutive cuts to form successive candy cores, and means for conveying the cores away from the saw means for further processing.

4,385,883

PREHEATED EXTRUDER

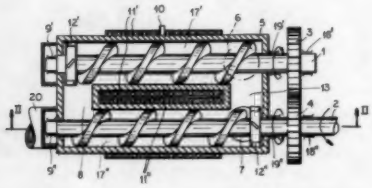
Wilhelm Hanslik, Vienna, Austria, assignor to American Maplan Corporation, McPherson, Kans.

Filed Sep. 3, 1980, Ser. No. 183,932

Claims priority, application Austria, Sep. 4, 1979, 5858/79

Int. Cl.³ B29B *1/04*

U.S. Cl. 425—204 **5 Claims**



1. In an extruder having a housing provided with an inlet for polymeric bulk material to be shaped into a coherent article, at least one feedscrew in said housing for plasticizing and masticating said material prior to discharging it under pressure through a shaping die, and heating means for maintaining said material at an elevated temperature within said housing,

the combination therewith of a preheating zone in a section of said housing located between said inlet and said feedscrew, said heating means extending to said section for maintaining same at an elevated temperature, a first auger in said section passing close to said inlet for feeding the incoming material to a location remote from said inlet, and a second auger passing close to said remote location for feeding the material delivered by said first auger to the entrance of a channel leading to a main housing part containing said feedscrew, said housing forming a first passage in the vicinity of said inlet and a second passage at said remote location interconnecting the feed paths of said material in a closed loop, said entrance communicating directly with said first passage for enabling recirculation of said material through said closed loop by said first and second augers upon obstruction of said channel.

4,385,884

GRANULATION CHAMBER FOR PLASTICS MATERIALS

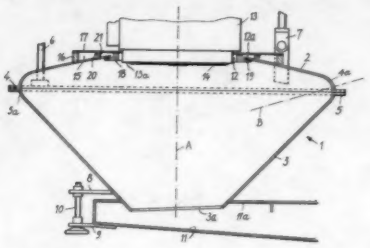
Giorgio Pecci, Via Curiel, 15, S. Maria Maddalena, (Province of Rovigo), Italy

Filed Jan. 26, 1981, Ser. No. 228,660

Claims priority, application Italy, Jan. 29, 1980, 4727/80[U]

Int. Cl.³ B29C *17/14*

U.S. Cl. 425—313 **2 Claims**



1. A granulating apparatus, comprising an extruder head with an extrusion outlet having a vertical axis with a downward direction of extrusion, a rotating star arrangement of knives below and close to said extrusion outlet for cutting granules of plastics material extruded from said extruder head, a granulating chamber arranged below said extrusion outlet and having a lower portion and an upper portion connected therewith, said lower portion having a frusto-conical shape coaxial with said axis and converging downwardly into a discharge outlet, and said upper portion having upwardly an opening with a rim and a substantially frusto-conical shape converging upwardly into said opening having said rim surrounding said extruder head, wherein the apparatus further comprises a collar defining an annular space extending around said opening and connected to a water supply for cooling the granules, said collar internally delimiting said annular space and extending into said opening and having an outer flange member defining with the rim of said opening an annular mouth for creating a water film streaming along the inner surface of said upper chamber portion and wherein the star of knives is arranged to rotate in a plane intersecting said upper chamber portion.

4,385,885

LINING OF PASSAGEWAYS

Eric Wood, Ossett, England, assignor to Insituform International, Inc., Jersey, Channel Islands

Filed Mar. 3, 1981, Ser. No. 239,962

Claims priority, application United Kingdom, Mar. 7, 1980, 8007877

Int. Cl.³ B29C *17/07*; B32B *1/10*

U.S. Cl. 425—387.1 **3 Claims**

1. Apparatus for everting a flexible tubular liner into a passageway comprising:

A. an enclosure having a top, a bottom and a partition proximate and extending generally transverse to said top;

B. an entry port adjacent said top through which said lining can be fed in a sealing fashion into said enclosure;

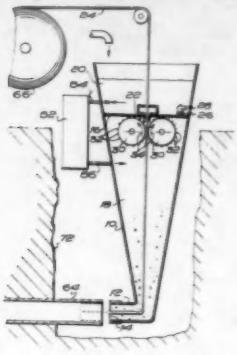
C. an exit port at said bottom to which an end of said lining can be attached;

D. a pressurizing chamber defined by said enclosure adapted to develop fluid pressure to assist in everting said lining out of said exit port through an end of said lining attached at said exit port;

E. roller means located in said pressurizing chamber adapted to engage and advance said liner for the controlled eversion of said liner into said passageway; and

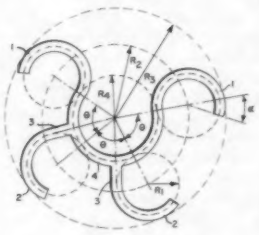
F. an upper filling cavity located above and in fluid commu-

nication with said pressurizing chamber and defined in part by said partition, said upper filling cavity adapted to



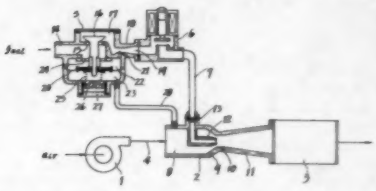
receive and hold fluid for introduction into said pressurizing chamber.

4,385,886
SPINNERET PLATE
Harry V. Samuelson, Chadds Ford, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Jan. 21, 1982, Ser. No. 341,333
Int. Cl.³ A01J *21/00*
U.S. Cl. 425—464 **9 Claims**



1. A spinneret plate having two parallel planar surfaces and at least one capillary extending through the plate from one planar surface to the other, said capillary having an inlet orifice and an outlet orifice, said outlet orifice comprising a plurality of interconnected slots, at least two of said slots being arc-shaped slots, each of said at least two arc-shaped slots being coincident with the circumference of a circle having a radius R_1, each of said arc-shaped slots subtending an angle of 120 to 270 degrees, the apexes of the angles of the arcs of the at least two arc-shaped slots lying on the circumference of a circle having a radius R_2 which is 1.1 to 6 times larger than R_1, and said apexes being separated by at least the number of degrees equal to 270/N where N is the number of said at least two arc-shaped slots; at least 90 degrees of arc of each of said at least two arc-shaped slots lying outside the circle defined by R_2, the area of said at least two arc-shaped slots being at least 50% of the total area of the outlet orifice, each of said at least two arc-shaped slots being joined at only one end to at least one other of said at least two arc-shaped slots by at least one slot that is located within the circle defined by R_2, the path of said at least one other slot being such that it does not cross the circle that would exist if said arc-shaped slots were extended, more than 82% of the area of the outlet orifice being outside a central circle having a radius ½ the radius of the smallest circle that, touching at least two points, circumscribes the outlet orifice; and when there are only two arc-shaped slots their unjoined ends being wider than the width of the slot that is located within the circle defined by R_2 and their unjoined ends being pointed in the same rotational direction.

4,385,887
COMBUSTION CONTROL APPARATUS
Yoshio Yamamoto; Yukio Nagaoka, both of Nara, and Yoshiyuki Yokoajiro, Yamato Koriyama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Continuation of Ser. No. 29,379, Apr. 12, 1979, abandoned. This application Jun. 1, 1981, Ser. No. 268,758
Claims priority, application Japan, Apr. 17, 1978, 53-45502
Int. Cl.³ F23N *1/02*
U.S. Cl. 431—90 **2 Claims**



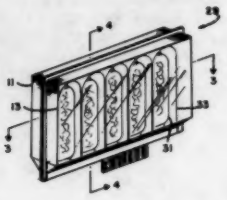
1. A combustion control apparatus comprising:
a premix combustion burner;
a primary air feed passage for supplying primary air;
an injector disposed between the primary passage and the burner and comprising, from upstream to downstream, an air passage having an inlet section for introducing air thereinto, a flow contracting section having its inner diameter progressively decreasing as it extends downstream, a constricted section of substantially a constant inner diameter at any section thereof and having a length of 0.5 to 3 times its inner diameter, and an enlarged section communicating with the constricted section and having its inner diameter gradually increasing as it extends downstream to the burner;
a fuel injecting nozzle arranged coaxially with the constricted section of the injector, said nozzle having a discharge end facing downstream and disposed in the vicinity of a transverse plane passing through the upstream end of the constricted section whereby the fuel and air are mixed in said enlarged section of the injector, said nozzle having at the downstream end thereof an outer diameter of 0.3 to 0.5 times the inner diameter of the constricted section;
a fuel feed passage communicating with the nozzle;
a pressure regulator disposed in the fuel feed passage and comprising a valve port, a valve body for controlling the degree of opening of the valve port, a pressure difference producer disposed downstream from the valve port and having low pressure section means for producing a pressure lower than the outlet pressure from the pressure regulator, a balance diaphragm disposed in opposed relation with the valve port and having an area substantially equal to the area of the valve port, a main diaphragm having an area larger than the area of the balance diaphragm, said two diaphragms being connected to the valve body, said low pressure section means communicating directly with a diaphragm chamber defined between the two diaphragms, a back pressure chamber on the side of the main diaphragm opposite to the valve port;
an equalizing pipe for introducing the pressure in the inlet section of the injector into said back pressure chamber; and
an orifice arranged in the fuel feed passage between the regulator and the nozzle.

4,385,888

VACUUM-FORMED HOUSING ARRAY

David R. Broadt, Lewisburg, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Filed Mar. 27, 1981, Ser. No. 247,979
Int. Cl.³ F21K 5/00
U.S. Cl. 431—359 16 Claims



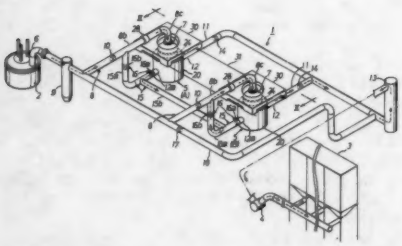
1. In a multilamp photoflash array having a plurality of electrically energizable flashlamps connected to operating circuits on a printed circuit board, the improvement comprising a single piece of plastic material thermoformed into a housing member foldable into a pair of substantially identical light transmitting side members affixed to one another and to said printed circuit board providing an envelope for containing undesired particles occuring upon energization of said flashlamps.

4,385,889

APPARATUS FOR PREHEATING MATERIAL FOR MAKING STEEL

Shouzo Yasukawa, Kobe, Japan, assignor to Nikko Industry Co., Ltd., Kobe, Japan

Filed Aug. 19, 1981, Ser. No. 294,370
Int. Cl.³ F27D 17/00; F27B 3/18
U.S. Cl. 432—179 9 Claims



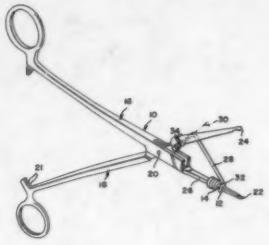
1. An apparatus for preheating a charge for steel making furnace with the heat of exhaust gas from the furnace, comprising a plurality of independent preheating units each including a stationary container having a upper opening and installed in a fixed position, a movable container serving to accommodate the charge therein, having a charge inlet at its upper portion and a bottom outlet with an openable bottom closure and vertically movable into or out of the stationary container, and a top closure provided with transfer means and horizontally movable to open and close the charge inlet of the movable container; at least one supply duct for connecting an exhaust gas discharge portion of the furnace to a gas inlet portion of each preheating unit; at least one discharge duct provided for each preheating unit for eventually discharging the exhaust gas passing through the preheating units; and connecting ducts each connecting a gas outlet portion of each preheating unit to the gas inlet portion of another preheating unit adjacent thereto so that the exhaust gas passes through the plurality of independent preheating units in succession in series.

4,385,890

APPLICATOR TOOL FOR ORTHODONTIC LOOPS

Paul E. Klein, Lake Oswego, Oreg., assignor to Modcom, Inc., Canby, Oreg.

Filed Jun. 21, 1982, Ser. No. 390,299
Int. Cl.³ A61C 7/00
U.S. Cl. 433—4 8 Claims



1. An applicator tool for use in attaching elastomeric loops to orthodontic tooth appliances, to secure an archwire thereto, said tool comprising

an arm adapted to hold a stack of loops to permit loop sliding in a downstream direction on the arm,

another arm mounted for swinging between open and closed positions with respect to the first-mentioned arm,

a pair of loop-gripping tips formed adjacent the downstream ends of said arms adapted for clamping a loop, with said other arm in its closed position, in a manner permitting attachment of the clamped loop to a tooth appliance, and

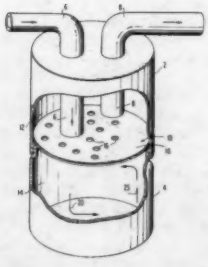
loop-feed means mounted on said other arm for sliding contact movement against the first-mentioned arm between an upstream position, where the feed means is adapted first to climb over the downstream side, and subsequently to engage the upstream side, of a loop disposed nearest the tip in said first-mentioned arm, and a downstream position, where the feed means is adapted to place the engaged loop in position for such clamping, when said other arm is moved from said open condition toward said closed position.

4,385,891

DENTAL APPARATUS FOR PREVENTING LOSS OF PRECIOUS METAL PARTICLES

Eugene F. Ligotti, 7 Bay Hills Ct., Huntington, N.Y. 11743

Filed Apr. 9, 1981, Ser. No. 252,697
Int. Cl.³ A61C 17/04
U.S. Cl. 433—92 11 Claims



1. Dental apparatus for separating particles of precious metal from a debris-containing mixture received from the mouth of a dental patient, comprising

an enclosure,

a baffle and conduit assembly which includes inlet conduit means, outlet conduit means and a baffle means,

said baffle means being located in said enclosure for dividing the enclosure into an upper chamber and a lower chamber,

said inlet conduit means being in communication with the lower chamber for introducing into the lower chamber said mixture which contains particles of precious metal, said inlet conduit means having a substantially smaller cross section than said lower chamber so that the mixture in said lower chamber will have a lower velocity than the mixture moving through said inlet conduit means and particles of precious metals may settle gravitationally from the mixture in the lower chamber,

said baffle means being operable to prevent premature flow of said mixture directly into the upper chamber before gravitational settlement has occurred,

aperture means extending through the plane of the baffle means for enabling fluids to flow from the lower chamber to the upper chamber, said aperture means having a greater cross sectional area than the inlet conduit means so that fluids flowing from the lower chamber to the upper chamber will have a lower velocity than the mixture flowing through the inlet conduit means into the lower chamber,

said aperture means having a size which permits debris which is suspended in the mixture and is less dense than the particles of precious metal to flow upwardly through the plane of the baffle to the outlet conduit means,

said outlet conduit means being in communication with the upper chamber for receiving fluids which have passed from the lower chamber into the upper chamber after particles of precious metal have gravitationally settled therefrom in the lower chamber,

means for permitting removal from the apparatus of at least a lower portion of the enclosure means which contains gravitationally settled particles of precious metal.

4,385,892

SETTING COMPOSITIONS FOR DENTAL PURPOSES

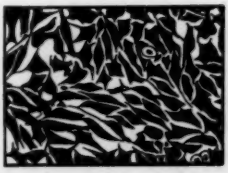
Atsushige Sato, No. 24-3, 4-chome, Asagayakita, Suginame-ku, Tokyo; Ishi Miura, No. 21-6, 3-chome, Kamimeguro, Meguro-ku, Tokyo, both of Japan; Yasuhiro Kumei, Tokyo, Japan; Osamu Okuno, Narashino, Japan, and Bunsaku Yoshida, Warabi, Japan, assignors to Atsushige Sato; Ishi Miura and G-C Dental Industrial Corp., all of Tokyo, Japan

Filed Mar. 9, 1982, Ser. No. 356,443

Claims priority, application Japan, Mar. 20, 1981, 56-39575

Int. Cl.³ A61K *6/08*

U.S. Cl. 433—228 **7 Claims**



1. A setting composition for dental purposes comprising a dental silver alloy composed mainly of silver and tin, and including one or more of copper, zinc, indium, palladium and gold; mercury in an amount sufficient to amalgamate said alloy; and selenium.

4,385,893

ELASTIC SHAFT COUPLING

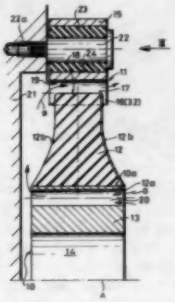
Gerhard Kirschey, Ittertaler Str. 52, D-56 Wuppertal 11, Fed. Rep. of Germany

Filed Oct. 23, 1980, Ser. No. 199,833

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1979, 2942874

Int. Cl.³ F16D *3/64*

U.S. Cl. 464—17 **8 Claims**



1. A shaft coupling comprising:

a rigid inner coupling member connectable to a shaft;

an annular elastic coupling element vulcanized only to said inner member and surrounding same and of a cross section decreasing readially outwardly therefrom such that the shear stress in said element is uniform at all locations outwardly from said inner coupling member except at most in the region thereof;

a rigid outer coupling member surrounding the outer periphery of said coupling element and in engagement therewith only under radial precompression of said coupling element without vulcanization, said element being connectable to a rotatable body independently of the outer coupling member; and

further comprising interengaged formations provided on an inner periphery of said outer coupling member and on said outer periphery of said coupling element forming a connection therebetween free from play at least in a peripheral direction, said coupling element being mirror symmetrical about a transverse median plane perpendicular to an axis of the coupling,

said outer periphery of said coupling element being toothed and said body being provided with an array of entrainers engaging in gaps between teeth of said outer periphery of said element.

4,385,894

COUPLINGS

Raymond Sharpe, Mirfield; Trevor J. Griffiths, Bradford, and Peter Hunt, Shipley, all of England, assignors to Lucas Industries Limited, Great Britain

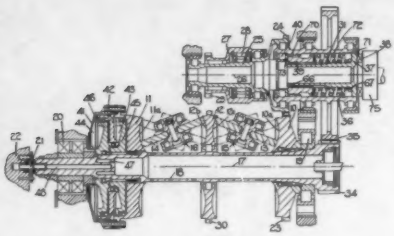
Continuation-in-part of Ser. No. 824,248, Aug. 12, 1977, abandoned. This application Feb. 7, 1980, Ser. No. 119,444

Int. Cl.³ F16D *11/00*

U.S. Cl. 464—31 **5 Claims**

1. A coupling between two rotary element's axially interengaging teeth of said elements arranged for driving engagement between said elements, each of said teeth of both of the elements having at least one face inclined at an angle to apply, during driving engagement between said teeth faces, a force tending to disengage said teeth, one of said elements including two coaxial components, helical splines between said two components, one of the components having said axial teeth thereon, said helical splines applying in use, when rotation takes place in the direction of such tooth face engagement, a

force tending to move said other one of said components in an axial direction away from said teeth, stop means for limiting relative axial movement between said two components, an element sensitive to temperature rise arranged to restrain said tendency for disengagement of said teeth, temperature rise in excess of a predetermined value resulting in said two compo-



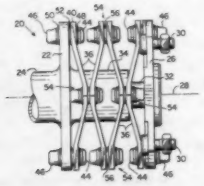
nents being moved axially to disengage the teeth, rotation in the opposite direction causing the two components to move relatively in axial direction, through said helical splines, to allow ratcheting of the teeth, and spring means arranged to hold the said components in a position to prevent re-engagement of the teeth when the temperature sensitive element has melted.

4,385,895

FLEXIBLE COUPLING WITH QUADRILATERAL FLEX FRAMES

Charles J. Wirth, West Granby, Conn., assignor to Kamatics Corporation, Bloomfield, Conn.

Filed Nov. 17, 1980, Ser. No. 207,683
Int. Cl.³ F16D 3/60
U.S. Cl. 464—69 **17 Claims**



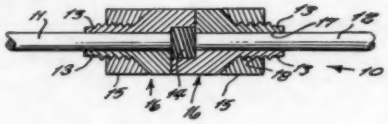
1. A flexible coupling for transmitting rotary motion between a driving member and a driven member, said coupling comprising a plurality of quadrilateral flex frames each of which flex frames has four leg portions respectively extending along the four sides of the frame and four corner portions, each of said four corner portions being located at the intersection of an adjacent two of said leg portions and being integrally connected to said adjacent two of said leg portions, first attachment means for connecting two diagonally opposed corner portions of one of said flex frames to said driving member, second attachment means for connecting two diagonally opposed corner portions of a second of said flex frames to said driven member, and third attachment means for connecting the other two diagonally opposed corner portions of said one flex frame to the other two diagonally opposed corner portions of said second flex frame so that each joint has associated with it four of said leg portions two of which extend away from said joint in one direction generally tangentially of said coupling and the other two of which extend away from said joint in an opposite generally tangential direction, said third attachment means including a plurality of joints each joining a pair of said corner portions, said two corner portions of each joint being located adjacent to one another and being from adjacent ones of said flex frames, said two corner portions of each joint further having flat bearing surfaces facing and parallel to one another and also having aligned apertures, each of said joints including an apertured spacer located between said two bearing surfaces of said associated pair of corner portions which spacer has parallel bearing faces engageable respectively with said two bearing surfaces, and each of said joints including a fastener with a shank passing through said apertures of said associated pair of corner portions and the aperture of said spacer for tightly holding said bearing surfaces of said corner portions in engagement with the bearing faces of said spacer.

4,385,896

SPLIT COUPLING

Eduardo R. Borda, 2701 Common St., Lake Charles, La. 70601

Filed Feb. 27, 1981, Ser. No. 238,823
Int. Cl.³ F16D 3/00
U.S. Cl. 464—76 **1 Claim**



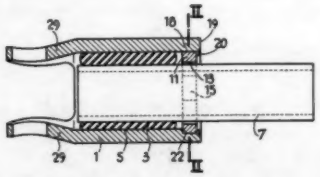
1. A split coupling, comprising, in combination, a plurality of four semi-cylindrical members, a pair of sleeves, and a single, shock-absorbing shoe, for installation around nearby ends of two axially aligned shafts; two of said members being placed on opposite sides of each said shaft, and retained in position by one of said sleeves around said pair of members, said shoe being located between said shaft ends, a single tooth formed on one end of each said semi-cylindrical member; said shoe being made of a resilient rubber and including a circular central portion and a pair of oppositely extending teeth; said teeth of said semi-cylindrical members and said teeth of said shoe forming a cluster ringing around said circular central portion and being toothingly engaged together.

4,385,897

ASSEMBLY OF A DRIVING ELEMENT WITH COUPLING MEANS

Bernard Mallet, Limay, France, assignor to NADELLA, France

Filed Feb. 27, 1981, Ser. No. 239,130
Claims priority, application France, Feb. 28, 1980, 80 04440
Int. Cl.³ F16D 3/76, 3/14
U.S. Cl. 464—89 **12 Claims**



1. A co-axial assembly comprising a driving element coupling means having a hollow hub which defines an inner wall, an elastically yieldable sleeve which is interposed in a radially compressed state between said inner wall of the hub and an outer surface of the driving element, and a member rigidly mounted on the hub adjacent one end of the hub, said member defining an opening through which opening the driving element extends with clearance between the driving element and said member, said element having a non-circular cross-sectional shape with rounded corners and said opening in said

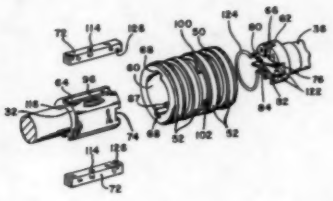
member having such non-circular shape that said rounded corners are capable of contacting and bearing against said member in an oblique manner were it not for the action of said elastically yieldable sleeve which is operative to normally maintain the driving element out of contact with said member but which, in the event of deterioration of the elastically yieldable sleeve, allows said oblique contact to occur so as to ensure the permanence of a drive between the driving element and the coupling means.

4,385,898

HYDRAULIC CONTROL APPARATUS

David D. Jordan, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Apr. 9, 1981, Ser. No. 252,530
Int. Cl.³ F15B 9/00
U.S. Cl. 464—101 **8 Claims**



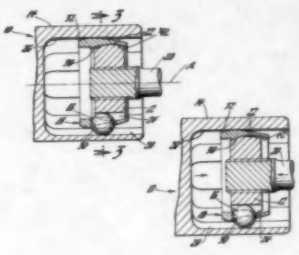
1. Apparatus having relatively rotatable input and output members arranged coaxially end-to-end and means for resiliently biasing said members to a neutral relative rotational position, characterized in that each of said members defines a radially extending transverse slot adjacent the other member, said slots in registry cooperating to define a transverse aperture, said biasing means being received in said transverse aperture, said transverse slots extend axially substantially equal distances relative said members, said biasing means includes at least one elongated resilient leaf spring received in said transverse aperture with the width of said leaf spring extending axially so that substantially one-half the width of said leaf spring is received in each of said transverse slots, said biasing means includes a pair of substantially similar leaf springs received in said transverse aperture in back-to-back relationship, said leaf springs engage one another at a point which is substantially coincident with the axis of said members, said slots including axially extending walls, said leaf springs including ends extending radially and contemporaneously engaging the axially extending walls of said slots, and said leaf springs terminate in radially outer edges defining radially extending notches, said notches receiving a retaining ring.

4,385,899

UNIVERSAL JOINT

Leonard N. Franklin, Jr., Reese, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 2, 1980, Ser. No. 182,865
Int. Cl.³ F16D 3/02
U.S. Cl. 464—146 **6 Claims**



1. In a universal joint having inner and outer drive members with longitudinal drive grooves, drive balls in the drive grooves for transferring torque between the drive members and a cage for positioning the drive balls which is pivoted on the inner and outer drive members about two respective centers which are on opposite sides of and spaced from the cage center,

the improvement comprising said cage having a cylindrical surface and two axially spaced stop surfaces inside the cage, and

said inner member slideably engaging the cylindrical surface and being moveable axially and pivotally thereon with respect to the cage between two pivot centers established by the inner member engaging the respective stop surfaces.

4,385,900

TRANSFER PRINTING SUPPORTS AND DYES FOR THEIR MANUFACTURE: FLUOROALKOXY ANTHRAQUINONE DYE

Peter Möckli, Basel, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Oct. 14, 1981, Ser. No. 311,332

Claims priority, application Switzerland, Oct. 17, 1980, 7772/80

Int. Cl.³ C09B 1/54; D06P 1/20

U.S. Cl. 8—471 9 Claims

1. A transfer printing support printed with a design which vaporises in the temperature range from 180° to 210° C. and containing, as red component, a 1-amino-4-hydroxyanthraquinone or 1-amino-4-amino-anthraquinone compound which does not contain sulfo or carboxyl groups and which carries the 2,2,2-trifluoroethoxy group in the 2-position of the anthraquinone nucleus.

4,385,901

READILY DISPERSIBLE DYE PREPARATIONS

Nitya G. Podder, Duggingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 9, 1981, Ser. No. 271,866

Claims priority, application Switzerland, Jun. 12, 1980, 4537/80

Int. Cl.³ C09B 67/30, 67/40; D06P 1/62, 1/607

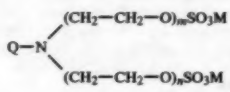
U.S. Cl. 8—527 17 Claims

1. A readily-dispersible, storage-stable, concentrated, dye composition, substantially devoid of hydrotropic agents and containing water, one or more dyes insoluble or difficulty soluble in water, a nonionic dispersing agent and an anionic dispersing agent selected from the group consisting of

(a) dialkylsulfosuccinates, the alkyl groups of which each contain 3–7 carbon aoms,

(b) sulfated or sulfonated fatty acids and esters thereof of 10 to 22 carbon atoms, and

(c) fatty amine-oxalkylation products of the formula



wherein

Q is an aliphatic hydrocarbon radical having 12–22 carbon atoms,

M is hydrogen, an alkali metal cation, ammonium cation or amine salt cation, and

m and n are integers, the sum of m+n being at least 2 and at most 50.

4,385,902

PROCESS FOR PURIFYING CRYSTALLINE POTASSIUM CHLORIDE

Brett G. Haugrud, Edmonton, Canada, assignor to PPG Industries Canada, Ltd., Edmonton, Canada

Continuation-in-part of Ser. No. 858,866, Dec. 8, 1977, abandoned. This application Jun. 24, 1980, Ser. No. 162,562

Int. Cl.³ B01D 9/00, 11/02; B01J 8/08

U.S. Cl. 23—293 R 22 Claims

1. A method of reducing the sodium chloride content of an industrially crystallized potassium chloride product having a potassium chloride content of at least 96 weight percent and containing a minor contaminating amount of sodium chloride, which comprises leaching under isothermal conditions compacted particles of a particle size from about 8 to 200 Tyler mesh of said potassium chloride product with an aqueous leaching solution, the solute of which solution is selected from the group consisting of potassium chloride and mixtures of potassium chloride and sodium chloride, said leaching solution being saturated with respect to potassium chloride and containing less than 45 grams of sodium chloride per liter of solution, for a time sufficient to reduce substantially the sodium chloride content of the compacted particles and separating leached particulate potassium chloride product having a sodium chloride content of less than about 0.5 weight percent from the leaching solution.

4,385,903

AGENT FOR PROMOTING FILTRATION DEHYDRATION OF METAL HYDROXIDE SLURRY

Noboru Moriyama, Utsunomiya, and Takeshi Inoue, Ichikaimachi, both of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Oct. 29, 1981, Ser. No. 316,170

Claims priority, application Japan, Nov. 18, 1980, 55-162212

Int. Cl.³ C02F 1/56; C01F 7/44

U.S. Cl. 23—313 R 14 Claims

8. A process for dewatering an aqueous slurry of a water-insoluble metal hydroxide or a slightly water-soluble metal hydroxide, comprising: filtering said slurry to obtain a first wet filter cake containing said metal hydroxide; then washing said first wet filter cake with washing water containing, as a dewatering aid, an anionic surfactant having the formula

$$R—O—AO—_nX$$

wherein n is an integer of from 1 to 100, R is alkyl or alkenyl having from 8 to 24 carbon atoms, A is alkylene having from 2 to 4 carbon atoms, and X is SO_3M, PO_3M_1, or CH_2COOM_1 wherein M is H, K, Na or NH_4 and M_1 is K or Na

to incorporate in said first wet filter cake an effective amount of said anionic surfactant so that said anionic surfactant is adsorbed on the surfaces of the metal hydroxide particles to render said surfaces hydrophobic, and then again filtering said first wet filter cake containing said surfactant to obtain a second wet filter cake containing said metal hydroxide.

4,385,904

NOVEL CORROSION INHIBITOR FOR ALCOHOL FUELS

Robert A. Sawicki, and Benjamin J. Kaufman, both of Wappingers Falls, N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Feb. 1, 1982, Ser. No. 344,322

Int. Cl.³ C10L 1/18

U.S. Cl. 44—56 8 Claims

1. A fuel composition for internal combustion engines comprising

(a) a major portion of a fuel containing (i) at least one alcohol selected from the group consisting of ethanol and methanol and (ii) gasoline in amount of 0–50 volumes per volume of alcohol; and

(b) a minor wear-inhibiting amount of, as a wear inhibiting additive, a cyclized C_3–C_{20} alkenyl succinic acid anhydride.

4,385,905

SYSTEM AND METHOD FOR GASIFICATION OF SOLID CARBONACEOUS FUELS

Gordon H. Tucker, Enumclaw, Wash., assignor to Everett Metal Products, Inc., Everett, Wash.

Continuation of Ser. No. 142,061, Apr. 4, 1980, abandoned. This application Jul. 20, 1981, Ser. No. 284,605

Int. Cl.³ C10J 3/66

U.S. Cl. 48—62 R 10 Claims

1. A method for gasification of particulate carbonaceous fuel to generate a combustible gas containing a minimum amount of gases which are condensible at ambient temperature, comprising the steps of:

(a) fast pyrolyzing the fuel to generate a combustible gas stream and a char by entraining the fuel in a heated, substantially oxygen-free gas stream having a temperature of

about 2000°–4000° F. by injecting the fuel into the moving stream;

(b) separating the combustible gas stream from the char;

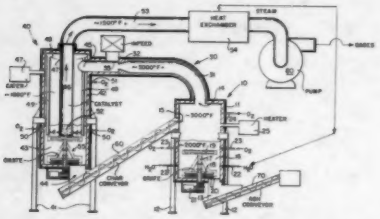
(c) collecting the char into a char bed; and

(d) passing the combustible gas stream through the char bed maintained at a temperature of between about 1600°–2500° F. to enhance the heat value of the combustible gas stream, to reduce the amount of gases which are condensible at ambient temperature, and to produce a residue from the char.

8. A gasification system to generate combustible gases which contain a minimum amount of gases that are condensible at ambient temperature, comprising:

(a) a reactor having

(i) means for fast pyrolysis of the fuel to produce a combustible gas and a char, including (a) means for feeding



the fuel to the reactor, and (b) means for the turbulent mixing of the fuel with a heated, substantially oxygen-free gas stream having a temperature between about 2000°–4000° F.; and

(ii) means for separating the gas and char;

(iii) means for creating a char bed from the char;

(iv) means for passing the gas through a substantially fixed distance of the char bed to further pyrolyze the gas into a product having a reduced amount of gases that are condensible at ambient temperature and to produce a residue from the char;

(b) means for conveying the residue to a means for burning;

(c) means for burning the residue to produce the heated, substantially oxygen-free gas stream having a temperature of between about 2000°–4000° F.; and

(d) means for conveying the heated, substantially oxygen-free gas to the reactor.

4,385,906

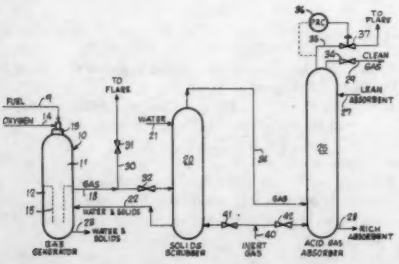
START-UP METHOD FOR A GASIFICATION REACTOR

Lawrence E. Estabrook, Whittier, Calif., assignor to Texaco Development Corporation, White Plains, N.Y.

Filed Feb. 25, 1982, Ser. No. 352,443

Int. Cl.³ C10J 3/46

U.S. Cl. 48—197 R **5 Claims**



1. A method for starting up a partial oxidation gas-generation system comprising a pressurized gas generator and gas purification train which comprises

a. isolating said gas generator from said gas purification train,

b. pressuring said gas purification train with gas to 50 to 80 percent of normal gasification reactor pressure,

c. heating the gas generator at substantially atmospheric pressure to a temperature at which reaction between fuel and oxygen will take place spontaneously producing a gas mixture comprising carbon monoxide and hydrogen,

d. introducing sulfur containing carbonaceous fuel and oxygen into said gas generator at a flow rate equivalent to 50 to 100 percent of the normal operating flow rate for said gas generator,

e. autogenously increasing the pressure in said gas generator to said pressure of said gas purification train, then

f. establishing communication between said gas generator and said gas purification train whereby gases from said gas generator flow through said gas purification train, and

g. discharging purified gases from said gas purification train wherein said gas purification train comprises means for water washing gases from said gas generator and means for absorbing acid gases from said water washed gases.

4,385,907

RESINOID BONDED GRINDING WHEEL WITH SUPPORT MEMBER MADE OF A HEAT INSULATING MATERIAL

Tamaki Tomita, Okazaki; Ikuo Suzuki, Chiryu; Tomoyasu Imai, Kariya, and Masato Kitajima, Hekinan, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Aug. 21, 1980, Ser. No. 179,985

Claims priority, application Japan, Aug. 22, 1979, 54-115420

Int. Cl.³ B24D 3/18

U.S. Cl. 51—296 **1 Claim**

1. A grinding wheel for use in grinding machines comprising:

a grinding element having hard grains selected from the group consistng of diamond and cubic boron nitrides distributed in a bonding matrix;

said bonding matrix comprising phenol resin and fillers; and

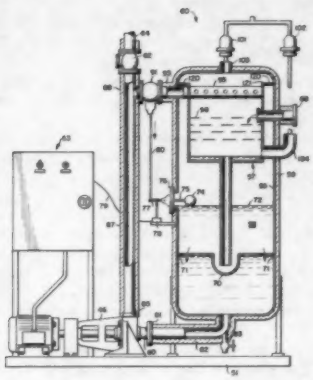
a support member made of a porous vitrified grinding wheel for mounting thereon said grinding element, said porous vitrified grinding wheel containing white fused alumina abrasive grains bonded by a vitrified bonding matrix and having such thermal properties of thermal conductivity and thermal expansion as to keep the diameter of said grinding wheel nearly constant irrespective of heat generated during a grinding operation.

4,385,908

HIGH PRESSURE CONDENSATE RETURN APPARATUS AND METHOD AND SYSTEM FOR USING THE SAME

Floyd W. Carmichael, Greensboro, N.C., assignor to Air Conditioning Corporation, Greensboro, N.C.

Filed Nov. 6, 1981, Ser. No. 319,057
Int. Cl.³ B01D 19/00
U.S. Cl. 55—39 21 Claims



1. A high pressure condensate return apparatus for use in a steam utilization process, comprising:

a vessel, which includes an inlet for receiving condensate from said process at a temperature and pressure about the same as in said process, said vessel defining a condensate zone in communication with a condensate outlet of said vessel, and a deaeration zone;

deaeration means in said deaeration zone of said vessel for separating non-condensible gases from the liquid condensate;

circulation means for circulating condensate from said condensate zone to said deaeration means in said deaeration zone, said circulation means including a pump having its suction end connected to the condensate outlet of said vessel and its discharge side connected to a conduit having an outlet for connection to a steam boiler in said process;

a modulating valve connected to said conduit, said valve acting when open to recirculate condensate from the condensate outlet to the deaeration zone of the vessel, and acting when closed to cause said condensate to be returned to the steam boiler;

level sensing means for sensing the level of condensate in said vessel for actuating said valve in response thereto in a predetermined manner; and

vent means for venting said non-condensible gases separated from the condensate in said deaeration zone to the exterior of said vessel.

17. In a process for generating high pressure steam in a steam boiler and providing said high pressure steam to a process vessel whereby condensate is formed, and providing said condensate to a high pressure condensate return vessel which includes a condensate return pump, wherein at least a portion of said condensate is deaerated to separate non-condensible gases from said condensate, the improvement comprising the steps of:

deaerating the condensate provided to the inlet of the condensate return vessel, and

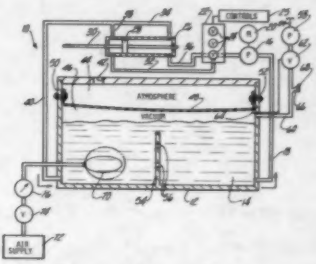
proportioning the relative rates of flow of condensate transmitted to said boiler and recirculated to said unit from the outlet of the steam condensate return vessel in response to the level of condensate within said vessel by a modulating valve connected between a condensate outlet of a vessel and a recirculating input of the vessel without flashing said condensate to steam and while continuously operating said pump at normal speed.

4,385,909

DE-AERATOR FOR HYDRAULIC POWER UNITS

Louis Starr, Birmingham, Mich., assignor to Starr Hydraulic-Electro Controls Co., Warren, Mich.

Filed Aug. 31, 1981, Ser. No. 297,656
Int. Cl.³ B01D 19/00
U.S. Cl. 55—55 10 Claims



1. A method of modifying recirculating hydraulic power units so as to remove gaseous impurities from hydraulic fluid regularly circulating between hydraulic devices and a sump tank whose interior is exposed to atmospheric air, said method comprising:

sealing off a lower portion of the tank;

connecting inlet and outlet fluid lines between said hydraulic devices and the sealed tank portion;

mounting a flexible device in the interior of the tank so that one side thereof is exposed to the pressure in the sealed tank portion, with an opposite side of the flexible device being continuously exposed to atmospheric air; and

creating a substantially constant vacuum level in the sealed tank portion so as to remove gaseous impurities from the fluid circulating therethrough.

5. In a hydraulic power unit having at least one hydraulic device controlled by hydraulic fluid regularly circulating through a recirculating hydraulic system including a sump tank, the improvement comprising:

means for forming a sealed portion in the tank;

means for regularly circulating hydraulic fluid between the hydraulic device and the sealed tank portion during the operation of said device;

vacuum means for continuously creating a vacuum in the sealed tank portion during operation of the device so as to continuously remove gaseous impurities from the circulating hydraulic fluid therein; and

a flexible device in the sealed tank portion having one side thereof exposed to the vacuum and an opposite side thereof exposed to a generally fixed source of increased air pressure relative to the vacuum whereby said flexible device operates to move and automatically adjust the volume of the sealed tank portion due to changes in the pressure differential on opposite sides of the flexible device as the fluid circulates through the tank.

4,385,910

APPARATUS AND METHOD FOR PRODUCING A GAS HAVING A CONTROLLED WATER VAPOR CONTENT

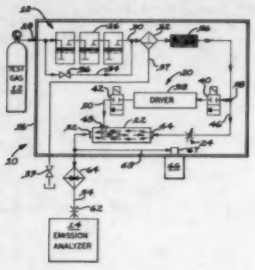
Melvin L. Eilers, Chillicothe, and Michael S. Englund, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 23, 1981, Ser. No. 334,009
Int. Cl.³ B01D 47/00
U.S. Cl. 55—90 7 Claims

5. A method for controlling the water vapor content of a gas, comprising:

adding water vapor to an unconditioned gas (12) in an amount sufficient to raise the saturation of said gas (12) to a range of from about 95 percent to about 99 percent and forming a first mixture;

removing water vapor from a preselected portion of said



first mixture and forming a preselected remaining second mixture;

mixing the preselected portions of said first and second mixtures and forming a resultant third mixture; and,

maintaining said third mixture at a temperature higher than the dew point temperature of said third mixture.

4,385,911

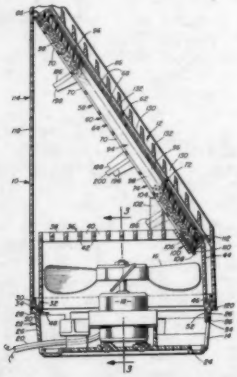
AIR FILTERING DEVICE

Ronald M. Popeil, Beverly Hills, and Alan L. Backus, Los Angeles, both of Calif., assignors to Ronco Teleproducts, Inc., Elk Grove Village, Ill.

Filed Jan. 22, 1982, Ser. No. 341,681

Int. Cl.³ B01D *50/00*

U.S. Cl. 55—316 **42 Claims**



1. An air filtering device adapted to convey air longitudinally therethrough from inlet means at the top thereof to outlet means at the base thereof, said air filtering device comprising:

(a) fan means generally at the base of said device for drawing air generally longitudinally through said device and expelling the air adjacent the base of said device through said outlet means;

(b) a unitary lower fan enclosure member and a unitary upper fan enclosure member encasing said fan means, said lower fan enclosure member having said outlet means therein and including first mating means, said lower fan enclosure member having second mating means, said second mating means being located adjacent said first mating means and laterally spaced exteriorly of said first mating means;

(c) said upper fan enclosure member having means for the passage of air therethrough and mating means for engaging said first mating means of said lower fan enclosure member for thereby encasing said fan means, said upper fan enclosure member and said lower fan enclosure member including means for locking together said upper and lower fan enclosure members;

(d) a filter for filtering air being conveyed through said device, said filter having a filter material enclosure containing filter material;

(e) filter positioning means in said upper fan enclosure member for receiving and positioning said filter above said upper fan enclosure member and outside said upper and lower fan enclosure members at an angle with respect to the longitudinal axis of said device and the general direction of air flow through said device;

(f) a housing for enclosing said filter and said upper fan enclosure member, said housing having mating means for engaging said second mating means of said lower fan enclosure member thereby enclosing said filter and said upper fan enclosure member, said housing and said lower fan enclosure member including means for locking said housing and said lower fan enclosure member together; and

(g) said housing having said inlet means therein, said inlet means comprising a planar surface with port means therethrough, said planar surface being disposed in a plane at an angle with respect to the longitudinal axis of said device equal to said angle of said filter, said inlet means being immediately adjacent said filter, the periphery of said filter extending to the interior wall of said housing.

4,385,912

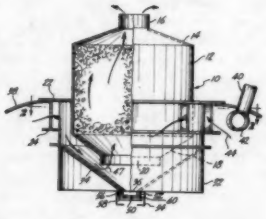
APPARATUS FOR EXTRACTING LIQUID AND FOAM FROM GAS

C. Earl Parrick, Seattle, and Forrest B. Busching, Tacoma, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Sep. 30, 1981, Ser. No. 307,179

Int. Cl.³ B01D *45/06, 45/16, 50/00, 19/02*

U.S. Cl. 55—329 **7 Claims**



1. An apparatus for extracting entrained liquid from a gas stream comprising:

an outer cylindrical wall having a plurality of inlet openings formed therein, said inlet openings permitting the passage of said stream of gas and entrained liquid into the space bounded by said cylindrical wall;

a plurality of directing vanes associated with said inlet openings and constructed and arranged so as to impart a direction to said gas stream and entrained liquid passing through said inlet openings so that said gas stream upon entering said bounded space travels in a direction substantially tangential to said outer cylindrical wall;

an inner cylindrical wall having a diameter less than said outer cylindrical wall and positioned coaxially with said outer cylindrical wall, the space between said inner and outer cylindrical walls forming an annular gas circulation

pathway through which said gas stream and entrained liquid pass;

a liquid-collecting cone affixed at its base to a lower edge of said outer cylindrical wall and converging downwardly, said liquid-collecting cone having a liquid outlet formed in its apex;

an inner cone of smaller base diameter and smaller altitude than said liquid-collecting cone oriented concentrically with said liquid-collecting cone and having its base contiguous with a lower edge of said inner cylindrical wall, the space between said liquid-collecting cone and said inner cone being in fluid communication with the space between said outer cylindrical wall and said inner cylindrical wall, such that as said airstream travels through said space between said outer cylindrical wall and inner cylindrical wall it spirals downwardly and enters the space between said liquid-collecting cone and said inner cone, said gas stream travelling in a downwardly spiralling path of decreasing diameter such that the swirling action of said gas stream causes the entrained liquid to collect on an inner surface of said liquid-collecting cone, said liquid that collects on said liquid-collecting cone exiting said cone through said liquid outlet and said inner cone having an inner gas outlet formed at its apex through which said gas stream passes in an upward direction into the space bounded by said inner cone; and

a mist elimination chamber affixed to said base of said inner cone and having a gas inlet in fluid communication with the space bounded by said inner cone and a gas outlet in fluid communication with the ambient air such that said gas stream passing through said inner gas outlet in the apex of said inner cone passes through the space bounded by said inner cone and enters said mist elimination chamber through said gas inlet and exits said mist elimination chamber through said gas outlet, said mist elimination chamber containing a liquid adsorbent material for removing remaining liquid particles from said gas stream as it passes through said mist elimination chamber.

4,385,913

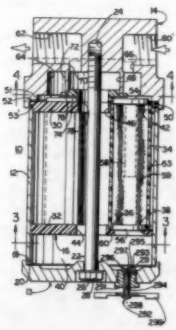
DEVICE FOR ELIMINATING DROPLETS OF LIQUID FROM A GAS STREAM

Arlo E. Lane, 2416 Wildwood Rd., Reading, Mich. 49274

Filed Nov. 27, 1981, Ser. No. 325,510

Int. Cl.³ B01D 53/04

U.S. Cl. 55—350 **4 Claims**



1. A device for eliminating droplets of liquid from a gas stream which comprises a tubular body, a spindle member mounted in the tubular body, the spindle member including an upper disc portion sealed at its edges to the tubular body, a lower disc member sealed at its edges to the tubular body, and a plurality of tubular portions spanning the upper and lower disc portions, a base member closing a lower end of the tubular body, there being a mixing chamber inside the body below the lower disc member, there being openings in the lower disc member providing communication between the mixing chamber and the interior of the tubular portions, a head member closing an upper end of the tubular body, there being a pair of chambers in the head member facing the interior of the tubular body, there being openings in the upper disc portion providing communication between one of the chambers in the head member and the interior of the tubular portions, there being return openings in the upper and lower disc members providing communication between the mixing chamber and the other chamber in the head member, liquid absorbent plug members in the tubular portions, means for introducing liquid carrying gas into the first mentioned chamber in the head member to flow through the plug members so that droplets of liquid in the gas are absorbed in and evaporated from the plug members, the gas being mixed in the mixing chamber, the gas passing from the mixing chamber through the discharge openings in the lower and upper disc members into the other chamber in the head member, and means for discharging the gas from the other chamber in the head member.

4,385,914

PROCESS AND APPARATUS FOR INCREASING THE CONCENTRATION OF ALCOHOL IN AQUEOUS SOLUTION

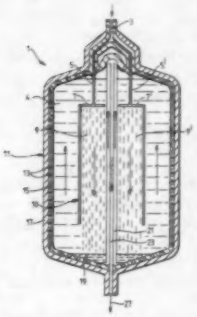
Frank A. Hewitt, Derby, and Keith G. Tillen, Mickleover, both of England, assignors to Rolls-Royce Limited, London, England

Filed Nov. 20, 1981, Ser. No. 323,475

Claims priority, application United Kingdom, Dec. 3, 1980, 8038744

Int. Cl.³ B01D 9/00

U.S. Cl. 62—536 **9 Claims**



1. A process for increasing the concentration of alcohol in aqueous solution, comprising the steps of:

(1) providing vertically disposed duct means immersed in said heat transfer fluid which define a volume of said heat transfer fluid interior to said duct means and a volume of said heat transfer fluid exterior to said duct means for allowing droplets of an input solution to fall through a refrigerated heat transfer fluid, such that some water in said droplets separates out as ice in said droplets wherein said droplets fall through said heat transfer fluid within said duct means; said duct means providing means to induce circulation of said heat transfer fluid such that said circulation is between said interior and exterior volumes while further providing means for refrigerating, said heat transfer fluid while moving through said exterior volume and taking heat from said droplets while moving through said interior volume;

(2) collecting said droplets as a mixture of ice and concentrated solution after said droplets have fallen through said heat transfer fluid; and

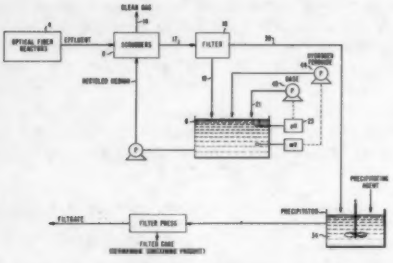
(3) removing said ice to produce a concentrated output solution from the process.

4,385,915

REMOVAL OF GERMANIUM FROM THE EFFLUENT OF PROCESSES FOR THE PRODUCTION OF OPTICAL COMPONENTS

Jeffrey A. Amelse, New Providence; Michael P. Bohrer, Washington, and Darwin L. Wood, New Providence, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 1, 1982, Ser. No. 353,582
Int. Cl.³ C03B 37/075
U.S. Cl. 65—3.12 7 Claims



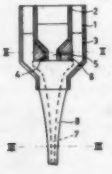
1. A process for the removal of germanium from the gaseous effluent of an optical fiber fabrication process, wherein said fabrication process involves the reaction of silicon and germanium compounds with oxygen in the substantial absence of a source of hydrogen, comprising the steps of (1) subjecting said effluent to an aqueous medium thereby dissolving gaseous germanium entities from said effluent in said aqueous medium and (2) precipitating said dissolved germanium entities by addition to said aqueous medium of a precipitating agent for said germanium.

4,385,916

METHOD OF PRODUCING AN OPTICAL FIBER HAVING A CORE WHICH HAS A NONCIRCULAR CROSS-SECTION, AND DOUBLE CRUCIBLE FOR USE IN THIS METHOD

Cornelis M. G. Jochem, and Petrus J. W. Severin, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 17, 1981, Ser. No. 293,719
Claims priority, application Netherlands, Aug. 30, 1980, 8004960
Int. Cl.³ C03B 37/075
U.S. Cl. 65—3.13 8 Claims



1. A method of manufacturing an optical fiber having a core with a noncircular cross-section, said method comprising the steps of:

flowing a cladding glass material through a first channel, said first channel having an annular shape, said cladding glass itself forming a channel when it flows out of the first channel;

flowing a core glass material through a second channel, an end of the second channel being surrounded by the first channel; and

flowing the core glass out of the end of the second channel into the channel formed in the cladding glass;

characterized in that:

the first channel has a noncircular wall; and

the method further comprises the steps of:

flowing the core and cladding glasses together through a third channel having a substantially circular cross-section; and

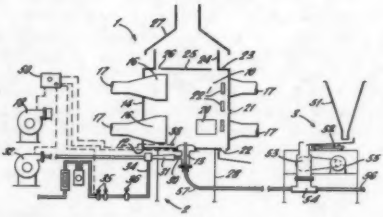
flowing the core and cladding glasses into contact with each other.

4,385,917

METHOD FOR MAKING GLASS BEADS

Geoffrey W. Aston, Horsham; Frank D. Moles, Cobham; Roderick M. Smart, Horsham, and Andrew H. J. Tate, Rudgwick, all of England, assignors to Redland Technology Limited, Surrey, England

Filed Aug. 5, 1981, Ser. No. 290,294
Claims priority, application United Kingdom, Aug. 15, 1980, 8026693; Feb. 23, 1981, 8105687
Int. Cl.³ C03B 19/10
U.S. Cl. 65—21.3 17 Claims



1. A method of producing glass beads comprising the steps of:

(a) introducing a first combustible gas or mixture of gases into a generally cylindrical chamber;

(b) igniting said first gas to form a flame of sufficient size and temperature to melt particles of glass introduced thereinto;

(c) introducing a current of a second gas or mixture of gases into said chamber generally tangentially of the chamber wall to:

(i) cause said flame to swirl in the manner of a vortex; and

(ii) provide a quenching zone of gas surrounding said flame;

(d) introducing particles of glass or glass forming materials into the swirling flame in such a manner that the particles enter the flame at or towards the centre thereof and follow a spiraling path through the flame for a period of time sufficient to form a bead, the bead thereafter passing into the quenching zone where it hardens before reaching the chamber wall; and

(e) collecting beads so formed.

4,385,918

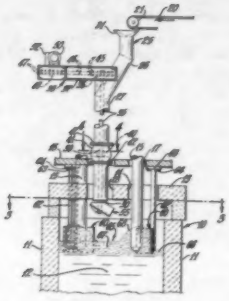
METHOD AND APPARATUS FOR FEEDING RAW MATERIAL TO AN ARC FURNACE

Charles S. Dunn, Pataskala, and Stephen Seng, Bladensburg, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jan. 26, 1982, Ser. No. 342,853
Int. Cl.³ C03B 3/00
U.S. Cl. 65—27 12 Claims

12. In a method of distributing pulverant glass batch raw

material internally of an arcing glass furnace having spaced arcing locations, the steps of feeding the glass batch raw material onto a rotary distributor located internally of the furnace



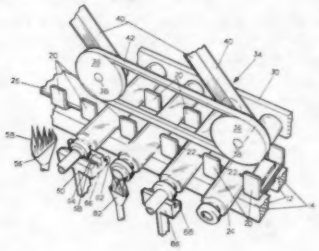
equidistant from the arcing locations, and rotating said distributor in a predetermined pattern to predominantly feed the glass batch raw material to the spaced arcing locations.

4,385,919

METHOD OF FORMING A VIAL BLOWBACK CAVITY

Albert S. Goffredi, Vineland; John E. Lisi, and Ralston G. Edwards, Jr., both of Newfield, all of N.J., assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Jul. 6, 1981, Ser. No. 280,439
Int. Cl.³ C03B 23/09
U.S. Cl. 65—109 13 Claims



1. A method of forming a mouth adjacent cavity in a cylindrical article, comprising the steps of:

providing cylindrical stock having a reduced diameter region adjacent one end of such cylindrical stock,

rotating such cylindrical stock,

applying heat to such one end and such reduced diameter region of such cylindrical stock,

forming an enlarged diameter region adjacent such reduced diameter region and an axially extending terminal lip by inserting a stepped mandrel into such one end and such reduced diameter region and applying a first external die to such one end and such reduced diameter region,

applying heat to such axially extending terminal lip, and

rolling such axially extending terminal lip inwardly by inserting a mandrel generally into such enlarged diameter portion and applying a second external die to such lip.

11. A method of forming a mouth adjacent cavity in a cylindrical glass article comprising the steps of:

providing a cylindrical glass stock having a reduced diameter region adjacent one end of such cylindrical stock, and rotating such cylindrical stock;

applying heat to such one end and such reduced diameter region of such cylindrical stock;

forming an axially extending terminal lip with excess glass at the one end of the stock;

applying heat to the axially extending terminal lip; and

rolling such axially extending terminal lip with excess glass axially inwardly by rotating the heated lip over an external die with a solid die surface that forces the heated glass inwardly to provide a blowback cavity at the end of the stock.

4,385,920

GRANULATION OF POTASH SALTS

William B. Dancy, and Kenneth L. Nichols, both of Carlsbad, N. Mex., assignors to International Minerals & Chemical Corp., Terre Haute, Ind.

Continuation of Ser. No. 746,658, Dec. 2, 1976, abandoned. This application Jan. 22, 1979, Ser. No. 5,047
Int. Cl.³ C05B 19/00, 7/00; C05D 1/02
U.S. Cl. 71—36 9 Claims

1. A process for the granulation of potassium sulfate, potassium nitrate, and mixtures thereof, comprising the steps of mixing the potash salt with an effective amount of a mono- or dibasic potassium or sodium phosphate binder or mixtures thereof and water, granulating the mixture and drying it.

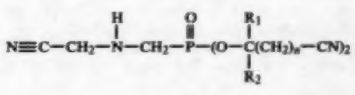
4,385,921

CYANOALKYLPHOSPHONATE DIESTERS OF N-PHOSPHONOMETHYLGLYCINONITRILE AS HERBICIDES

William R. Purdum, Maryland Heights, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jun. 19, 1981, Ser. No. 275,484
Int. Cl.³ A01N 57/18; C07F 9/40
U.S. Cl. 71—86 9 Claims

1. A compound useful as a herbicide of the formula



(I)

wherein n is an integer 0 or 1, and R_1 and R_2 are independently hydrogen or lower alkyl.

7. A herbicidal method which comprises contacting a plant with a herbicidally effective amount of a compound of claim 1.

4,385,922

METHOD OF INCREASING THE YIELD OF LEGUMES UTILIZING D- OR DL-α-O,O-DIETHYLPHOSPHORODITHIOYLACETYLPHENYLGLYCINE ETHYL ESTERS

Llewellyn W. Fancher, New Castle, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Aug. 26, 1981, Ser. No. 296,284
Int. Cl.³ A01N 57/14; C07F 9/165
U.S. Cl. 71—87 11 Claims

1. D-α-O,O-diethylphosphorodithioylacetylphenylglycine ethyl ester.

6. A method of increasing the yield of legumes comprising applying thereof a yield-increasing amount of DL-α-O,O-diethylphosphorodithioylacetylphenylglycine ethyl ester.

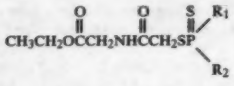
4,385,923
METHOD OF INCREASING THE YIELD OF LEGUMES UTILIZING O,O-DIALKYLDITHIOPHOSPHORYLACETYLGLYCINE ETHYL ESTERS

Llewellyn W. Fancher, New Castle; Francis H. Walker, Mill Valley, and Lawrence L. Buren, Cupertino, all of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Aug. 26, 1981, Ser. No. 296,598
Int. Cl.³ A01N 57/10
U.S. Cl. 71—87 8 Claims

1. A composition of matter comprising

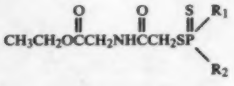
(a) a growth regulating amount of a compound having the structural formula



wherein R_1 and R_2 are independently selected from the group consisting of —OCH_3, —OC_2H_5, —OC_3H_7, and —OC_4H_7; and

(b) an inert carrier.

3. A method of increasing the yield of legumes comprising applying thereto a yield-increasing amount of a compound of the formula



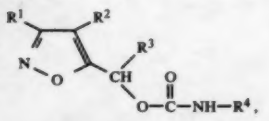
wherein R_1 and R_2 are independently selected from the group consisting of —OCH_3, —OC_2H_5, —OC_3H_7, and —OC_4H_7.

4,385,924
1,2-OXAZOLYL ALKYL CARBAMATES, AND THEIR USE AS HERBICIDES

Hans Theobald, Limburgerhof; Bruno Wuerzer, Otterstadt, and Karl Kiehs, Lampertheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 29, 1980, Ser. No. 201,801
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1979, 2943965
Int. Cl.³ A01N 43/80; C07D 261/14
U.S. Cl. 71—88 7 Claims

1. A 1,2-oxazolyl alkyl carbamate of the formula



I

where R^1 is alkoxyalkyl of a maximum of 3 carbon atoms, or alkoxycarbonyl of a maximum of 5 carbon atoms, R^2 denotes hydrogen, or unsubstituted or halogen-substituted alkyl of a maximum of 3 carbon atoms, R^3 denotes hydrogen, or alkyl of a maximum of 3 carbon atoms, and R^4 denotes phenyl which is mono- or polysubstituted by halogen, nitro, cyano, linear or branched alkyl, alkoxy, haloalkyl, haloalkoxy, alkanoyl or alkoxycarbonyl, each of a maximum of 5 carbon atoms, or by cycloalkyl of from 3 to 6 carbon atoms.

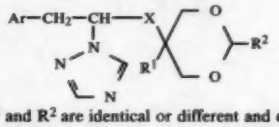
2. A process for combating the growth of unwanted plants, wherein a herbicide is used which consists essentially of a 1,2-oxazolyl alkyl carbamate of the formula I as defined in claim 1.

4,385,925
1,3-DIOXAN-5-YL-ALKYLTRIAZOLES, THEIR PREPARATION, THEIR USE FOR REGULATING PLANT GROWTH, AND REGULATORS CONTAINING THESE COMPOUNDS

Costin Rentzea, Heidelberg; Karl-Heinz Feuerherd; Bernd Zeeh, both of Ludwigshafen, and Johann Jung, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 1, 1981, Ser. No. 279,584
Claims priority, application Fed. Rep. of Germany, Jul. 9, 1980, 3025879
Int. Cl.³ A01N 43/64; C07D 405/06, 405/14, 409/14
U.S. Cl. 71—92 5 Claims

1. A compound of the formula I



I

where R^1 and R^2 are identical or different and each is hydrogen or alkyl of 1 to 5 carbon atoms, Ar is furanyl, thienyl, biphenylyl or naphthyl, or is phenyl which is unsubstituted or substituted by fluorine, chlorine, bromine, iodine, nitro or trifluoromethyl, or by alkyl, alkoxy or alkenyl, each of 1 to 5 carbon atoms, or by phenoxy, and X is —CO—, —CH(OH)— or —$CH(OR^3)$—, where R^3 is unsubstituted or chlorine substituted alkyl of 1 to 8 carbon atoms, or unsubstituted or chlorine-substituted alkenyl of 2 to 5 carbon atoms, or alkynyl of 3 or 4 carbon atoms or benzyl which is unsubstituted or substituted by fluorine, chlorine, bromine, nitro or trifluoromethyl or by alkyl or alkoxy of 1 to 4 carbon atoms, or R^3 is —CO—R^4, where R^4 is alkyl of 1 to 5 carbon atoms which is unsubstituted or substituted by halogen, alkenyl of 2 to 3 carbon atoms, alkoxy, oxo (=O) or carboxyalkyl.

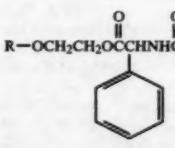
3. A composition for regulating plant growth, comprising an effective amount of one or more compounds of the formula I as defined in claim 1 and a solid or liquid carrier.

4,385,926
METHOD OF INCREASING THE YIELD OF LEGUMES UTILIZING CHLOROACETYL PHENYLGLYCINE ALKOXY ETHYL ESTERS

Francis H. Walker, Mill Valley, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Aug. 26, 1981, Ser. No. 296,597
Int. Cl.³ C07C 101/12; A01N 9/20
U.S. Cl. 71—111 11 Claims

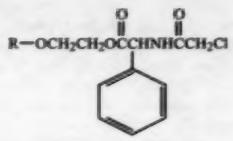
1. A compound having the structural formula



wherein R is selected from the group consisting of —CH_3, —C_2H_5 and —C_3H_7.

3. A yield enhancing composition of matter for legumes comprising

(a) a yield enhancing amount of a compound having the structural formula



wherein R is selected from the group consisting of —CH_3, —C_2H_5 and —C_3H_7; and

(b) an inert carrier.

4,385,927

BENZAMIDE DERIVATIVES AND HERBICIDAL COMPOSITION CONTAINING THE SAME

Tetsuo Takematsu; Masaaki Hoya, both of Utsunomiya, and Toshitaka Kaneshiki, Tokyo, all of Japan, assignors to Hodogaya Chemical Co., Ltd., Tokyo, Japan

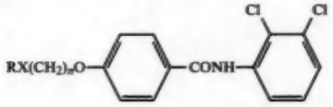
Filed Oct. 20, 1980, Ser. No. 198,968

Claims priority, application Japan, Nov. 20, 1979, 54-149460

Int. Cl.³ A01N *37/22*; C07C *103/76, 103/78*

U.S. Cl. 71—118 **4 Claims**

3. A herbicidal composition which comprises a benzamide derivative having the formula



wherein R represents a C_1–C_8 alkyl group; X represents oxygen or sulfur atom; n is an integer of 1 or 2 as an active ingredient with an adjuvant.

4,385,928

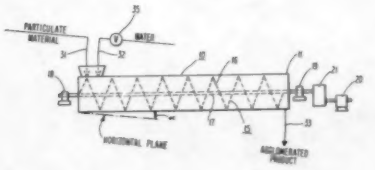
AGGLOMERATION METHOD

Robert E. Clevely, Narvon, Pa., assignor to Lukens, Inc., Coatesville, Pa.

Filed Jul. 29, 1981, Ser. No. 288,184

Int. Cl.³ C22B *1/242*

U.S. Cl. 75—3 **3 Claims**



1. Method for agglomerating finely-divided particulate material in a steel-making furnace flue dust containing calcium oxide, said method comprising:

(a) Introducing said flue dust into the inlet end of an operating screw conveyor means comprising an upwardly-inclined casing, a helical impeller rotating within said casing and having a length of about 9 feet and a pitch of about 10 inches;

(b) Introducing water into said flue dust adjacent said inlet end and in an amount in the range of from about 8 to about 12 pounds per 100 pounds of dry flue dust introduced;

(c) Operating said conveyor impeller at a rotational speed in the range of from about 2000 to about 8000 revolutions per minute; and

(d) Removing from said outlet end particulate material that is agglomerated at least in substantial part.

4,385,929

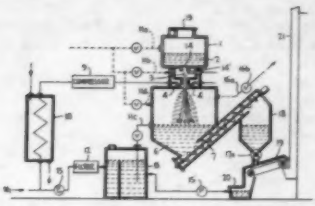
METHOD AND APPARATUS FOR PRODUCTION OF METAL POWDER

Minoru Ichidate, and Toshihiko Kubo, both of Amagasaki, Japan, assignors to Sumitomo Metal Industries Limited, Osaka, Japan

Filed Jun. 19, 1981, Ser. No. 275,506

Int. Cl.³ B22F *9/08*

U.S. Cl. 75—0.5 C **13 Claims**



1. A method of producing a metal powder useful in the making of powder metallurgical articles which comprises the steps of

(a) providing a stream of a molten metal in a zone containing no atmospheric air,

(b) contacting the stream of molten metal in the zone containing no atmospheric air with at least one stream of a non-polar solvent so as to cause the stream of molten metal to form into atomized particles of molten metal,

(c) collecting in a mixture the used non-polar solvent and the formed atomized particles of molten metal from step (b) while preventing atmospheric air from contacting the formed atomized particles of molten metal,

(d) separating the used non-polar solvent from the formed atomized particles of molten metal contained in the mixture in step (c), and

(e) separately recovering the non-polar solvent and the formed atomized particles of molten metal obtained in step (d).

4,385,930

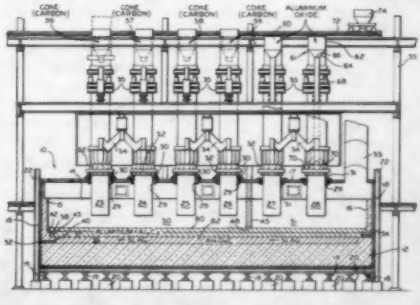
METHOD OF PRODUCING ALUMINUM

John A. Persson, Gibsonia, Pa., assignor to Reynolds Metals Co., Richmond, Va.

Filed Feb. 2, 1981, Ser. No. 230,629

Int. Cl.³ C22B *21/02*

U.S. Cl. 75—10 R **9 Claims**



1. A method of producing aluminum in an electric arc furnace having primary and secondary zones separated by means constructed and arranged to permit the flow of molten but not gaseous products between zones, said primary zone containing

aluminum oxycarbide slag and said second zone aluminum carbide, comprising the steps of:

providing a charge of carbon into said primary zone,

providing a charge of alumina into said secondary zone,

simultaneously melting said charges to form a molten mixture of aluminum and aluminum carbide in said primary zone and aluminum tetraoxycarbide slag and aluminum in said secondary zone,

flowing said slag from said secondary zone into said primary zone to react with the aluminum carbide therein to form aluminum,

flowing the molten aluminum and aluminum carbide mixture to said secondary zone for reaction with the alumina therein to form aluminum,

and tapping aluminum from said secondary zone, all while preventing the passage from one of said zones to the other of said zones of gaseous products generated in the primary and secondary zones.

4,385,931

METHOD AND FURNACE FOR REFINING OF MAGNESIUM

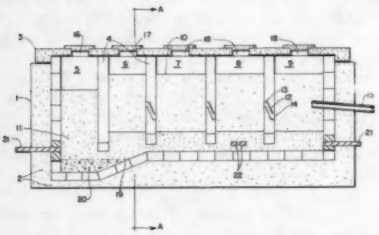
Oddmund Wallevik, and Jan B. Ronhaug, both of Porsgrunn, Norway, assignors to Norsk Hydro a.s., Oslo, Norway

Filed Oct. 29, 1981, Ser. No. 316,421

Claims priority, application Norway, Dec. 17, 1980, 803804

Int. Cl.³ C22B *26/22*

U.S. Cl. 75—67 A **9 Claims**



1. A furnace for the continuous refining of molten magnesium by the precipitation therefrom of impurities as sludge, said furnace comprising:

a furnace body having a refractory lining defining a furnace interior in the bottom of which is a layer of molten salt;

a plurality of vertical partition walls dividing said furnace interior into a sludge accumulation chamber and a plurality of successively arranged precipitation chambers, bottom ends of said walls being spaced from the bottom of said furnace lining at a level beneath the upper surface of said molten salt, said precipitation chambers adapted to contain molten magnesium above said upper surface of said molten salt, and said accumulation chamber adapted to be free of molten magnesium;

means for charging molten magnesium to be refined into a first said precipitation chamber adjacent said accumulation chamber, such that said charged molten magnesium is directed below the surface of the molten magnesium in said first precipitation chamber toward said molten salt, whereby impurities in the charged molten magnesium are precipitated downwardly through said molten salt, and the charged molten magnesium rises upwardly within said first precipitation chamber;

the bottom of said first precipitation chamber being inclined downwardly toward said accumulation chamber, such that said precipitated impurities are directed downwardly along said inclined bottom and into said accumulation chamber; and

each said partition wall between two adjacent said precipitation chambers having means for sequentially transferring said molten magnesium in a processing direction from said first precipitation chamber into and through the remainder of said successively arranged precipitation chambers in a manner such that, during each transfer between adjacent said precipitation chambers, molten magnesium at a relatively upper level in the upstream said precipitation chamber is introduced at a relatively lower level into the downstream said precipitation chamber, said transferring means comprising at least one skewed channel through the respective said partition wall, each said channel having an inlet from the respective upstream precipitation chamber and an outlet into the respective downstream precipitation chamber, said inlet being at a level higher than said outlet, whereby any impurities remaining in the molten magnesium in each said precipitation chamber downstream of said first precipitation chamber precipitate therefrom to the molten salt therein.

4,385,932

AMORPHOUS MAGNETIC ALLOY

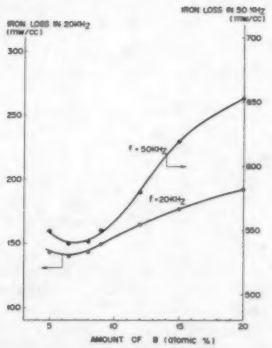
Koichiro Inomata, Yokohama; Michio Hasegawa, Machida; Senji Shimanuki, Atsugi, and Masakatsu Haga, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 4, 1981, Ser. No. 270,568

Claims priority, application Japan, Jun. 24, 1980, 55-84588

Int. Cl.³ C22C *33/00*

U.S. Cl. 75—123 B **4 Claims**



1. An amorphous magnetic alloy low in iron loss having a general formula:

$$(Fe_{1-a}Ni_a)_{100-x-y}Si_xB_y$$

where,

$0.2 \leqq a \leqq 0.7$

$1 \leqq x \leqq 0$

$5 \leqq y \leqq 9.5$

$10.5 \leqq x+y \leqq 29.5$.

4,385,933

HIGHLY HEAT RESISTANT AUSTENITIC IRON-NICKEL-CHROMIUM ALLOYS WHICH ARE RESISTANT TO NEUTRON INDUCED SWELLING AND CORROSION BY LIQUID SODIUM

Karl Ehrlich, Karlsruhe; Waman Vaidya, Geesthacht, and Ludwig Schäfer, Bruchsal, all of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany

Filed Jun. 2, 1981, Ser. No. 269,784

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1980, 3020844

Int. Cl.³ C22C *38/06, 38/22, 38/28, 38/32*

U.S. Cl. 75—124 **8 Claims**

1. A highly heat resistant, austenitic iron-nickel-chromium alloy which is resistant to neutron induced swelling and to corrosion by liquid sodium, comprising, by weight:

(a) 8.0% to 15.5% chromium;
(b) 14.5% to 25.5% nickel;
(c) 1.5% to 2.0% manganese;
(d) 1.3% to 1.7% molybdenum;
(e) 0.25% to 0.5% titanium;
(f) 0.29% to 1.0% silicon;
(g) 0.09% to 0.12% carbon;
(h) 0.005% to 0.01% nitrogen;
(i) 0.003% to 0.01% boron; and
(j) the remainder, iron and manufacturing impurities,

wherein when nickel is present in an amount of 14.5% to 21.0%, by weight, the percentage, by weight, of chromium present is less than or equal to 0.66×(the percentage of nickel)+1.6%.

4,385,934

AUSTENITIC IRON ALLOYS HAVING YTTRIUM

James A. McGurty, 6501 Ridge Rd., Cincinnati, Ohio 45213

Continuation-in-part of Ser. No. 32,617, Apr. 23, 1979, abandoned. This application Jun. 30, 1982, Ser. No. 393,852

Int. Cl.³ C22C *38/06*

U.S. Cl. 75—124 F **7 Claims**

1. In a workable, high temperature austenitic nickel, chromium, aluminum iron-base alloy in which the nickel, chromium and aluminum contents are balanced to insure that the alloy is austenitic and is an alloy which forms an aluminum oxide film which is protective of the base metal to 1700° F. in air, said alloy consisting essentially of 18.0 to 35.0 weight percent of nickel, 10.0 to 20.0 weight percent of chromium, 4.0 to 5.0 weight percent aluminum, and the balance consisting essentially of iron, and the improvement in said alloy which consists in including in said alloy from 0.04 to 0.06 weight percent of yttrium to obtain improved hot workability and resistance to grain growth, as compared with an otherwise similar alloy which is free from yttrium, said alloy being austenitic by virtue of the balancing of said alloying constituents and containing no delta ferrite.

4,385,935

METHOD OF PRODUCING LIGHT WEIGHT CEMENT FOR USE OF CEMENTATION OF OIL AND GAS WELLS

Sigve Skjeldal, Hovik, Norway, assignor to Elkem A/S, Oslo, Norway

Continuation of Ser. No. 198,668, Oct. 20, 1980, abandoned, which is a continuation-in-part of Ser. No. 177,872, Aug. 14, 1980, abandoned. This application Nov. 24, 1981, Ser. No. 324,559

Claims priority, application Norway, Aug. 16, 1979, 792673

Int. Cl.³ C04B *7/02*

U.S. Cl. 106—98 **4 Claims**

1. The improved method of cementing the space between the interior wall of a well and the exterior wall of an internal tube therein with a low-density pumpable slurry of cement used in oil and gas well exploration which comprises the steps of:

(a) mixing an oil and gas well cement with water and particulate silica formed by precipitating the fumes generated by an electrometallurgical smelting furnace for producing silicon or ferrosilicon, said particulate silica having a surface area from about 18 to about 22 m^2 per gram, the proportion of said particulate silica to cement in said slurry being about one part of silica for each two parts of cement;
(b) adjusting the density of said slurry by adding sufficient water to provide a low density pumpable aqueous slurry of not over about 12.6 pounds per gallon; and
(c) pumping said slurry into the space between said tube and interior wall of the well for cementation thereof.

4,385,936

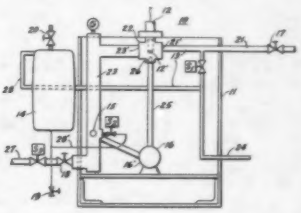
METHOD FOR CLEANING A PROCESS MONITORING PROBE

Gregory R. Rossi, Valparaiso, Ind., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Division of Ser. No. 174,322, Aug. 1, 1980, Pat. No. 4,307,741. This application Sep. 4, 1981, Ser. No. 299,451

Int. Cl.³ B08B *3/02*

U.S. Cl. 134—18 **1 Claim**



1. A method for cleaning a process monitoring probe while inserted in a sample container through which flows a sample process stream, comprising the sequential steps of:

(a) injecting a supply of flushing water at a pressure between 20 and 60 psi into said sample process stream,
(b) draining said flushing water and sample process stream,
(c) ceasing draining of said flushing water and sample process stream,
(d) discharging a jet of water from a nozzle at said inserted probe,
(e) injecting a chemical cleansing agent into the water to be discharged from the nozzle,
(f) ceasing injecting the supply of flushing water, ceasing discharging said jet of water and ceasing injecting the cleaning agent,
(g) resuming draining of said sample process stream, and
(h) providing sequential timer means for sequentially implementing steps a-g.

4,385,937

REGROWING SELECTIVELY FORMED ION AMORPHOSIZED REGIONS BY THERMAL GRADIENT

Yamichi Ohmura, Sagamihara, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 14, 1981, Ser. No. 263,502

Claims priority, application Japan, May 20, 1980, 55-65897; Oct. 16, 1980, 55-143625

Int. Cl.³ H07L *21/263, 21/225*

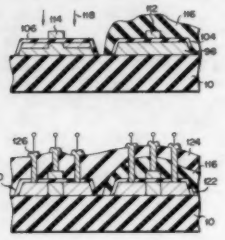
U.S. Cl. 148—1.5 **13 Claims**

1. A method for manufacturing a semiconductor device having a semiconductive layer such as a silicon layer on a substrate made of electrically insulative material such as sapphire, which comprises the steps of:

(a) forming a layer of single-crystalline semiconductive material such as silicon on a surface, which is defined by a first crystal plane, or said substrate having a first thermal expan-

sion rate, said layer having a second thermal expansion rate and a second crystal plane as its principal plane;

(b) injecting selected ions into said layer to partially convert the single-crystalline semiconductive material into a first layer region which is a amorphous semiconductive material and a second region which remains a single-crytalline semiconductive material, said first layer region being positioned below said second layer region and being substantially in contact with said substrate, and said second layer region including a surface of said layer and having a predetermined thickness;



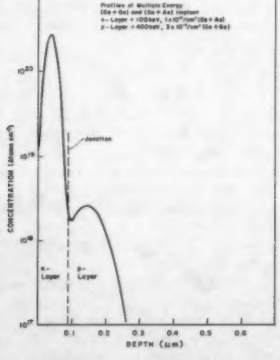
(c) annealing a structure obtained through the preceding steps to reconvert said amorphous material of said first layer region to single-crystalline semiconductive material on the basis of solid phase growth with said second layer region as a seed, while keeping said first and second layer regions of said layer at a first temperature and at least a large part of said substrate at a second temperature lower than said first temperature, so as to finally form a single-crystalline semiconductive layer on said substrate, whereby, when said annealed structure returns to room temperature, said single-crystalline semiconductive layer is prevented from having therein a compressive stress due to thermal contraction of said substrate.

4,385,938

DUAL SPECIES ION IMPLANTATION INTO GAAS

Yoon S. Park, Kettering, and Yung K. Yeo, Dayton, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 10, 1981, Ser. No. 300,839
Int. Cl.³ H01L *21/263*
U.S. Cl. 148—1.5 **10 Claims**


Profiles of Multiple Energy
(Ga + Ge) and (Ga + As) Implant
n - Layer + 100keV, 1x10¹⁵/cm² (Ga + As)
p - Layer + 400keV, 3x10¹⁵/cm² (Ga + Ge)
Junction
n- Layer
p- Layer
CONCENTRATION (atoms cm⁻³)
DEPTH (μm)

1. A method of forming a p-n junction in semiconducting GaAs device comprising:

a. dual ion implantation of Ge and Ga to provide a layer having p-type conductivity activity;

b. forming an n-layer by dual ion implantation of Ge and As at a dose in the range from about $1\times10^{14}/cm^2$ extending to at least $3\times10^{15}/cm^2$ at an energy level substantially less than that used to form the p-layer; and

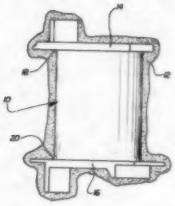
c. annealing said device.

4,385,939

METHOD OF PRODUCING A SINGLE CRYSTAL ARTICLE

Charles S. Kortovich, Jr., Euclid, and Bruce M. Guenin, University Heights, both of Ohio, assignors to TRW Inc., Cleveland, Ohio

Filed Nov. 13, 1981, Ser. No. 321,052
Int. Cl.³ C22F *1/10*
U.S. Cl. 148—2 **6 Claims**



1. A method of producing a nickel-base single crystal superalloy article having a refined gamma prime phase disposed in a gamma phase matrix, said method comprising the steps of casting a nickel-base single crystal superalloy article having a coarse gamma prime phase disposed in a gamma phase matrix, forming in the single crystal article a stress concentration of sufficient severity to cause recrystallization upon heating of the single crystal article to a solution heat treatment temperature at which the gamma prime phase can go into solid solution in the gamma phase, reducing the severity of the stress concentration by heating the single crystal article to a recovery temperature which is below the temperature at which recrystallization occurs in the portion of the article containing the stress concentration, after reducing the severity of the stress concentration, solution heat treating the article by heating the article to a temperature which is below the solidus temperature of the article and above the recrystallization and recovery temperatures to cause the gamma prime phase to go into solid solution with the gamma phase, and, thereafter, precipitating a refined gamma prime phase in the gamma phase matrix while maintaining the single crystal structure of the article.

4,385,940

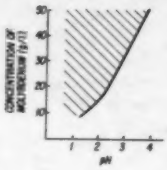
METHOD FOR ANTICORROSIVE TREATMENT OF GALVANIZED STEEL

Shigeki Kirihara, Kobe, and Tsutomu Ohshima, Kakogawa, both of Japan, assignors to Kobe Steel, Limited, Kobe, Japan

Filed Jan. 12, 1981, Ser. No. 224,480
Claims priority, application Japan, Jan. 11, 1980, 55-1765
Int. Cl.³ C23F *7/08*
U.S. Cl. 148—6.15 R **7 Claims**

1. An anticorrosive treatment for preventing white rust on zinc-coated materials comprising contacting said zinc-coated material with an acidic aqueous solution consisting essentially

of at least one molybdenum compound selected from the group consisting of molybdic acid and molybdates in a concentration



of 10–200 g/l, calculated as molybdenum, and phosphoric acid to adjust the pH to a value of 1–6.

4,385,941

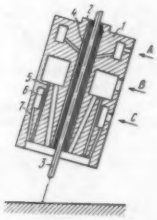
METHOD AND APPARATUS FOR PRODUCING A MOLTEN PUDDLE DURING SCARFING

Artur L. Daiker, prospekt B.Khmelnitskogo, 27, kv. 14; Anatoly I. Veis, ulitsa Vorovskogo, 9, kv. 77; Anatoly D. Bogatyrev, ulitsa Solnechnaya, 6b, kv. 44; Evgeny Y. Kochengin, ulitsa Chasovaya, 5, kv. 2; Viktor N. Palko, ulitsa Shosse metallurgov, 37a, kv. 53; Nikolai M. Novoselov, ulitsa Degtyareva, 89, kv. 58; Jury V. Volchematiev, ulitsa Zakharenko, 1-b, kv. 101, and Gennady Y. Morozov, ulitsa Kommunisticheskaya, 6a, kv. 67, all of Chelyabinsk, U.S.S.R.

Filed Nov. 12, 1981, Ser. No. 320,205

Int. Cl.³ B23K *7/08*

U.S. Cl. 148—9.5 **4 Claims**



1. A method for producing a molten puddle on the surface of a metal workpiece being scarfed, comprising the steps of igniting a fuel gas-oxygen mixture; heating a steel wire with the resultant flame to a temperature of from 900° to 1,450° C.; introducing the thus heated wire in a stepwise manner into a flow of scarfing oxygen in a flow of fuel gas disposed in the scarfing oxygen flow, the latter being directed so as to strike the surface of the metal wire at one point thereof with the resultant formation of droplets of molten metal of said wire; and transferring said droplets of molten metal onto the surface of the metal workpiece being scarfed.

4,385,942

METHOD FOR PRODUCING NB_3SN SUPERCONDUCTORS

Kyoji Tachikawa, Tokyo; Toshihisa Asano, and Takao Takeuchi, both of Sakura, all of Japan, assignors to National Research Institute for Metals, Tokyo, Japan

Filed Sep. 16, 1981, Ser. No. 302,956

Claims priority, application Japan, Sep. 18, 1980, 55-128551

Int. Cl.³ H01L *39/24*; H01B *12/00*

U.S. Cl. 148—11.5 Q **3 Claims**

1. In a method for producing an Nb_3Sn superconductor which comprises elongating a composite comprising a core portion of an alloy containing niobium and a matrix portion selected from the group consisting of a copper-tin alloy containing 2 to 9 atomic percent tin, a copper-tin-aluminum alloy containing 2 to 9 atomic percent tin and 0.1 to 18 atomic percent aluminum and a copper-tin-gallium alloy containing 2 to 9 atomic percent tin and 0.1 to 15 atomic percent gallium; and heat-treating the elongated composite to form an Nb_3Sn layer between the core portion and the matrix portion; the improvement wherein the core portion of the composite is made of a niobium-titanium alloy containing 0.1 to 10 atomic percent of titanium.

4,385,943

CORROSION-RESISTANT URANIUM

Victor M. Hovis, Jr., Kingston; William C. Pullen, Knoxville; Thomas G. Kollie, Oak Ridge, and Richard T. Bell, Knoxville, all of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 21, 1981, Ser. No. 313,414

Int. Cl.³ B32B *15/00, 15/20*

U.S. Cl. 148—31.5 **1 Claim**

1. A new article of manufacture comprising a uranium or uranium alloy substrate and a corrosion-resistant coating on exposed surfaces of said substrate, said coating consisting essentially of ion-plated aluminum or zinc with at least the outer surface of said coating being formed of aluminum or zinc chromate, said coating being of a thickness in the range of about 60 to 280 microinches, and said aluminum chromate or zinc chromate providing about 10 to 50 microinches of the thickness of said coating.

4,385,944

MAGNETIC IMPLEMENTS FROM GLASSY ALLOYS

Ryusuke Hasegawa, Morristown, N.J., assignor to Allied Corporation, Morristown, N.J.

Filed May 29, 1980, Ser. No. 154,187

Int. Cl.³ H01F *1/02*

U.S. Cl. 148—104 **5 Claims**

1. A method for making molded magnetic metal alloy articles, comprising:

(a) admixing an insulator with ferromagnetic glassy metal powder;

(b) compacting said powder with mechanical pressure to form a consolidated magnetic glassy metal body, the powder particles being kept substantially separate by said insulator.

4,385,945

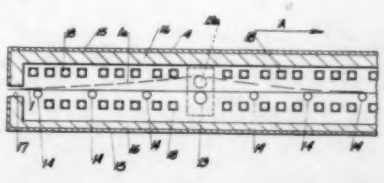
LIFT-OFF MEANS AND METHOD FOR USE WITH A HORIZONTAL CONTINUOUS HEARTH ROLL FURNACE FOR THE TREATMENT OF METALLIC STRIP

Thomas A. Compton, Middletown, and Fred Byrd, Lebanon, both of Ohio, assignors to Armco Inc., Middletown, Ohio

Filed Nov. 19, 1981, Ser. No. 322,760

Int. Cl.³ C21D *9/56*

U.S. Cl. 148—156 **16 Claims**



1. A method of guiding and supporting a strip in a horizontal continuous furnace of the type having a plurality of hearth rolls in parallel spaced relationship and extending transversely of said furnace to tangentially contact and support said strip as it passes through said furnace, comprising the steps of provid-

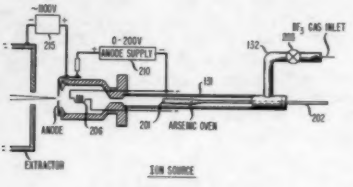
ing a lifting roll in said furnace extending transversely thereof and located at an elevated position, threading said strip through said furnace and over said lifting roll, and initiating continuous passage of said strip through said furnace, and over said lifting roll to lift said strip out of contact with and above some at least of said hearth rolls.

4,385,946

RAPID ALTERATION OF ION IMPLANT DOPANT SPECIES TO CREATE REGIONS OF OPPOSITE CONDUCTIVITY

Sean N. Finegan, Aberdeen; James H. McFee, Colts Neck; Robert G. Swartz, Highlands, and Alexander M. Voshchenkov, Freehold, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 19, 1981, Ser. No. 275,418
Int. Cl.³ H01L *21/203, 21/263*
U.S. Cl. 148—175 **7 Claims**



1. A method of fabricating a semiconductor device having at least two regions of opposite conductivity by implanting ions generated in an ion gun and coupled through a mass filter comprising the steps of

creating a plasma in said ion gun having ions consisting of at least two elements which provide dopants of opposite conductivity in said semiconductor device,

adjusting the mass filter to couple the ions of one of said two elements to a first region of said semiconductor device, and

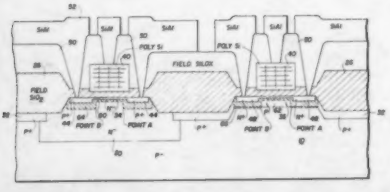
readjusting the mass filter to couple the second one of said two elements to a second region of said semiconductor device.

4,385,947

METHOD FOR FABRICATING CMOS IN P SUBSTRATE WITH SINGLE GUARD RING USING LOCAL OXIDATION

Mark A. Halfacre, Melbourne, and David Shih-Hua, Satellite Beach, both of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Jul. 29, 1981, Ser. No. 287,936
Int. Cl.³ H01L *21/225;* **B01J** *17/00*
U.S. Cl. 148—187 **16 Claims**



1. A method of fabricating complementary insulated gate field effect transistors in a P conductivity type substrate having a P conductivity type impurity concentration of 1×10^{14} to 5×10^{15} carriers per cubic centimeter comprising:

forming a first masking layer over said substrate with a first opening to define the surface area of a P channel device;

introducing N impurities into said substrate through said first opening to form an N conductivity type well region in said substrate having a surface N conductivity type impurity concentration of 1×10^{15} to 3×10^{16} carriers per cubic centimeter;

removing said first masking layer;

forming an oxide inhibiting second masking layer over regions in which the source, drain and channel of the transistors are to be formed;

forming a third masking layer on said second masking layer and said substrate over only said well region;

introducing P impurities into said substrate to form a P conductivity type guard ring of a greater impurity concentration than said substrate in said substrate except at said well region and the N channel transistor region of said substrate;

removing said third masking layer;

oxidizing said substrate to form a thick oxide layer on said substrate except on said transistor regions as defined by said second masking layer;

removing said second masking layer to expose said transistor regions; and

forming said transistors in said exposed transistor regions.

4,385,948

IN SITU CURED BOOSTER EXPLOSIVE

Russell Reed, Jr.; May L. Chan, and Horace D. Stanton, all of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 7, 1980, Ser. No. 176,172
Int. Cl.³ C06B *45/10*
U.S. Cl. 149—19.5 **6 Claims**

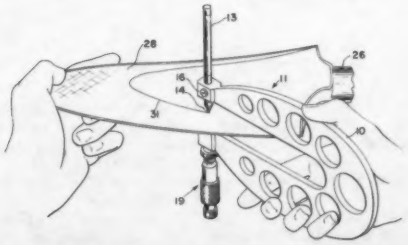
1. An in situ cured explosive comprising:
cyclotrimethylenetrinitramine;
carboxyl-terminated poly-1,6-hexanediol dimerate;
epoxidized vegetable oil; and
a cure catalyst.

4,385,949

METHOD OF TRACING CONTOUR PATTERNS FOR USE IN MAKING GRADUAL CONTOUR RESIN MATRIX COMPOSITES

Manuel J. Fontes, San Jose, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 2, 1980, Ser. No. 136,660
Int. Cl.³ B44C *00/00*
U.S. Cl. 156—59 **7 Claims**



5. A method of making ply patterns for a resin matrix composite structural component having first and second opposed surfaces each having gradual contours, said method comprising:

interconnecting a spindle and a line tracer so that they are coaxial and facing each other a predetermined distance apart;

temporarily adhering a first sheet of paper to the first surface of a model of said structural component wherein said model has first and second opposed surfaces corresponding to said component first and second surfaces, respectively;

positioning said tracer on said paper with said spindle touching said second surface opposite said tracer;

simultaneously moving said tracer and said spindle along the path that maintains the tracer on the paper and the spindle on the second surface whereby a model constant-thickness locus is traced on said paper and a ply pattern is created;

removing said first sheet of paper from said model;

temporarily adhering a second sheet of paper to said first surface of said model;

changing the distance between said spindle and tracer by an amount corresponding to the thickness of a resin matrix composite ply; and

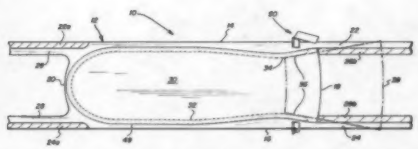
repeating the afore-mentioned third and fourth steps in that order.

4,385,950

SMALL ICE PACKS AND METHOD OF MANUFACTURING THE SAME

Vance M. Hubbard, Euless, and Welton K. Brunson, Bedford, both of Tex., assignors to Tecnol, Inc., Fort Worth, Tex.

Division of Ser. No. 184,466, Sep. 5, 1980, Pat. No. 4,347,848.
This application Aug. 16, 1982, Ser. No. 408,637
Int. Cl.³ A61F 7/10; B32B 31/18
U.S. Cl. 156—73.1 **2 Claims**



1. A method for constructing an improved ice pack comprising the steps of:

positioning in overlapping relation first and second strips of three ply material of the type having an inner layer of waterproof material, an intermediate layer of absorbent material and an outer layer of absorbent material perforated by a number of tiny holes;

ultrasonically welding said first and second strips together along two sides thereof and along one end thereof to form an envelope;

ultrasonically welding said first and second strips together interiorly of said envelope to form a bag member being open at the open end of said envelope and closed on all other sides;

cutting out a portion of said material outside of the closed end of said envelope such that a pair of tie strings are formed internally of the edges of said envelope in parallel relation therewith; and

cutting out a portion of said material adjacent said open end to form a pair of tie strings extending from the open end of the envelope coincident with the sides thereof.

4,385,951

LOW PRESSURE LAMINATION OF SAFETY GLASS

Jean P. Pressau, Evans City, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 25, 1981, Ser. No. 247,465
The portion of the term of this patent subsequent to Jul. 27, 1999, has been disclaimed.
Int. Cl.³ B32B 17/00; C09J 5/02
U.S. Cl. 156—105 **11 Claims**

1. A method of making laminated safety glass suitable for use in glazing closures comprising at least two glass sheets and an interlayer of plasticized interlayer material containing sufficient plasticizer to adhere to glass in the temperature range above room temperature and the temperature at which said plasticizer develops volatile products, said method comprising:

(a) supporting a first glass sheet on an essentially horizontal solid support surface with its upper surface exposed and its lower major surface in essentially continuous contact with said support surface,

(b) applying an excess of liquid plasticizer substantially only to the entire exposed upper surface of said first glass sheet so supported to form a continuous coating over said entire exposed upper surface,

(c) applying a sheet of plasticized interlayer material having patterned major surfaces to said continuous coating with its upper surface exposed to form a preassembly in such a manner as to avoid the presence of bubbles,

(d) applying an excess of liquid plasticizer substantially only to the entire exposed upper surface of said sheet of plasticized interlayer material to form a continuous coating over said latter entire exposed upper surface,

(e) applying a second glass sheet over said latter continuous coating to form an assembly in such a manner as to avoid the presence of bubbles, and

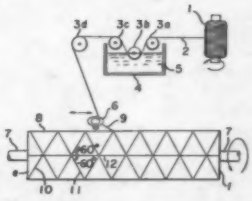
(f) subjecting said assembly to an atmosphere that excludes an autoclave, said atmosphere providing a temperature range between room temperature and the temperature at which said plasticizer develops a volatile product and a superatmospheric pressure not more than two atmospheres until said sheets are completely laminated to one another.

4,385,952

PROCESS FOR PREPARING FIBER REINFORCED PLASTICS

Michio Futakuchi, and Hidetoshi Kitakoga, both of Sagamihara, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 27, 1981, Ser. No. 296,876
Claims priority, application Japan, Aug. 27, 1980, 55-117947
Int. Cl.³ B65H 81/00
U.S. Cl. 156—174 **4 Claims**



1. A process for preparing a fiber reinforced plastic product which comprises:

filament winding a strand or rovings on a mandrel in three directions of substantially +60 degrees, −60 degrees and 0 degrees to the axis of the mandrel in desired turns to form braid fabric reinforced in three directions;

impregnating a resin before or after the winding step;

cutting out the resin pregnated braid fabric from the mandrel to obtain a prepreg reinforced in three directions; and

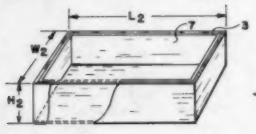
fabricating the prepreg in a desired configuration for a product by heating wherein a traverse is utilized and said winding step further comprises winding a strand at an angle of +60 degrees by shifting said traverse in a first direction from a first end to a second end of said mandrel while rotating said mandrel; winding the strand at an angle of −60 degrees by shifting the traverse in a second direction opposite said first direction from the second end to the first end after passing said traverse over the second end of said mandrel while rotating; stopping rotating of said mandrel; shifting said traverse from the first end; turning said mandrel half a turn and shifting said traverse from the second end to the first end after passing said traverse over the second end; and turning said mandrel half a turn to the original position after passing said traverse over the first end and again winding with an interval from the original position.

4,385,953

HAZARDOUS WASTE TRANSPORT CONTAINER LINER AND PROCESS FOR MANUFACTURING SAME

William C. Beck, 12717 Pecos Ave., Greenwell Springs, La. 70739

Filed Dec. 17, 1981, Ser. No. 331,590
Int. Cl.³ B31F *1/00*
U.S. Cl. 156—200 **5 Claims**



5. A process for manufacturing a plastic liner for use in a waste container, which comprises:

(a) extruding a plastic envelope of tubular cross-sectional cross-section;

(b) folding inward and lengthwise said envelope to form opposing folds;

(c) cutting said envelope lengthwise along a plane perpendicular to said opposing folds to form two "W" cross-sectional sheets; and

(d) sealing opposite side ends of each of said sheets to form said liners.

4,385,954

METHOD FOR APPLYING BINDING AGENTS TO FIBROUS WEBS

Walter L. Pauls, Appleton, and Raymond A. Dunleavy, III, Neenah, both of Wis., assignors to James River-Dixie/Northern, Inc., Greenwich, Conn.

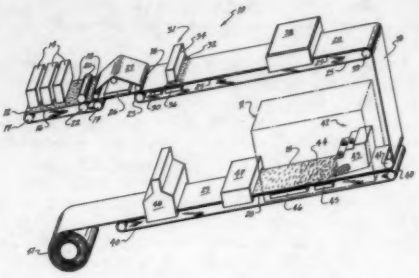
Division of Ser. No. 218,251, Dec. 19, 1980, Pat. No. 4,348,251.
This application Jul. 21, 1982, Ser. No. 400,360
Int. Cl.³ B29D *27/00*; B29J *5/00*
U.S. Cl. 156—244.21 **21 Claims**

1. A method of applying binding agent onto a second side of a fibrous web whose first side had been bonded previously, the method comprising the steps of:

(a) providing said once bonded fibrous web on a moving foraminous carrier, second side facing up,

(b) applying to said second side a foamed dispersion of a binding agent by extruder means, the extruder being characterized by an orifice outlet whose upper lip extends beyond its lower lip by between 1/16 and ¼ inch, said foamed dispersion being applied at an exit velocity approximately equal to the carrier velocity,

(c) drawing beneath said foraminous carrier a first vacuum just downstream of the extruder outlet orifice, said vacuum being between about 0.10 to 1.0 inch of water, whereby the foamed dispersion remains uniformly atop the web, the



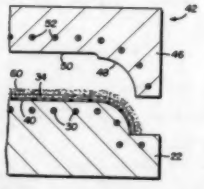
(d) drawing beneath the carrier a second vacuum further downstream of the extruder means, said vacuum being about between 2 and 15 inches of mercury, whereby the foamed dispersion is caused to penetrate said web.

4,385,955

METHOD OF FORMING CONTOURED FIBERGLASS SHEET

Ralph G. Doerfling, Northville, and Donald H. Warner, Southfield, both of Mich., assignors to Detroit Gasket, Detroit, Mich.

Filed Sep. 8, 1981, Ser. No. 300,335
Int. Cl.³ B29D *3/00, 31/00*; B29G *5/00*
U.S. Cl. 156—245 **13 Claims**



1. A method of forming a resin impregnated contoured fiberglass sheet having a smooth finish surface and a back surface, comprising the following steps:

(a) forming a sheet of loose glass fibers impregnated with an uncured thermosettable resin in a first die set having opposed relatively moveable similarly contoured dies, said dies being substantially evenly spaced throughout their forming contours including closing said first die set to compress said fiberglass sheet, the forming pressure of said first die set being sufficient to substantially fully compress said sheet and iron out any wrinkles in said sheet, and only one of said dies being heated to cure the resin in said smooth finish surface;

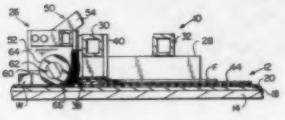
(b) releasing said forming pressure of said first die set, permitting said fiberglass sheet to expand to substantially the original thickness; and

(c) forming said fiberglass sheet in a second die set having opposed heated relatively moveable differently contoured dies by closing said second die set to compress said fiberglass sheet between said contoured heated dies, said dies completing the curing of the remaining uncured resin in said fiberglass sheet and permanently setting the contour of said sheet, while retaining said smooth finish surface.

4,385,956
APPARATUS AND METHODS FOR SPREADING SHEET MATERIAL

David R. Pearl, West Hartford, Conn., assignor to Gerber Garment Technology, Inc., South Windsor, Conn.

Filed Mar. 19, 1981, Ser. No. 245,364
Int. Cl.[3] B25B *11/00*; B23B *31/04*
U.S. Cl. 156—247 16 Claims

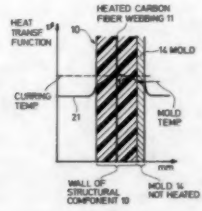


1. In an apparatus for working on limp sheet material and including means defining a sheet material support surface having a high coefficient of static friction relative to the sheet material, the improvement comprising a spreader assembly including a spreader carriage, means supporting said spreader carriage for movement longitudinally of the support surface in one and an opposite direction, a sheet of support material having a low coefficient of static friction relative to the support surface and to the limp sheet material, means for attaching one end portion of the support material to said spreader carriage to move with said spreader carriage and into overlying relation with an associated portion of the support surface in response to advancing movement of said spreader carriage in said one direction relative to said support surface, a pressure roller, and means supporting said pressure roller on the spreader carriage forward of said attaching means for rotation about a transversely extending axis in rolling engagement with said sheet material support surface and with limp sheet material spread thereon.

4,385,957
METHOD FOR HEATING A WEBBING REINFORCED BY CARBON FIBERS

Peter Wackerle, Ottobrunn, and Dieter Franz, Jettenbach, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm GmbH, Munich, Fed. Rep. of Germany

Filed Jul. 1, 1980, Ser. No. 165,118
Claims priority, application Fed. Rep. of Germany, Jul. 13, 1979, 2928293
Int. Cl.[3] B29C *19/06*
U.S. Cl. 156—273.9 9 Claims



1. A method for manufacturing structural components having a given shape, of fiber compound materials including a carbon fiber webbing embedded in an impregnating resin having a given curing temperature, comprising the following steps:

(a) arranging said carbon fiber webbing on an unheated support mold (14) conforming to at least part of said given shape,

(b) impregnating said carbon fiber webbing with said resin for embedding the carbon fiber webbing in the resin,

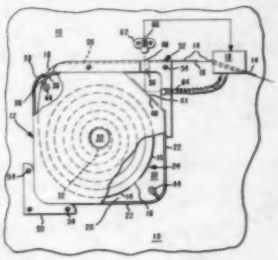
(c) curing said resin for bonding said resin to said carbon fiber webbing, said curing comprising supplying curing heat internally into said resin by temporarily passing an electric current through said carbon fiber webbing, said electric current being just sufficient to generate inside said resin at least said curing temperature of the resin, and switching off the electric current when said curing is substantially completed, whereby the carbon fiber webbing is permanently embedded in said resin as a reinforcing load supporting element of said structural component, and

(d) controlling the strength of said electrical current so that the latter is different in different areas of the webbing whereby the intensity of the heating may be adapted to the particular area or configuration of the webbing.

4,385,958
LABEL CASSETTE AND SYSTEM FOR MOUNTING SAME

George R. Long, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 6, 1981, Ser. No. 290,496
Int. Cl.[3] G03B *23/02*
U.S. Cl. 156—361 4 Claims



1. A cassette for holding a roll of labels releasably adhered to a support strip with position locator openings in the strip between each label, the cassette adapted to supply the support strip to a printer for label imprintation, the printer having a receptacle for receiving the cassette, the receptacle having a sensor for sensing label position by directing a beam of radiant energy toward the cassette and a detector for radiant energy positioned transversely of the beam, and means responsive to the detector for advancing the support strip for label imprintation, said cassette having:

a shell-like housing with a bottom wall and enclosing side walls for retaining the roll of labels,

a shaped exit slot on one side wall for directing the support strip along the one side wall toward one corner of the cassette,

the one corner defining a surface reflective of radiant energy, the surface transversely disposed relative to the one side wall, and said radiant energy passing from said beam to said detector through a position locator opening in the strip only when the cassette is properly positioned in the receptacle, and

a cover wall to enclose the shell-like housing.

4,385,959
SPLICING TAPE DISPENSER-APPLICATOR

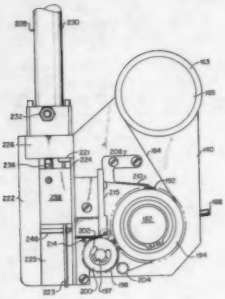
Louis J. Goguen, Cocagne, Canada, assignor to King Instrument Corporation, Westboro, Mass.

Filed Jul. 27, 1981, Ser. No. 286,873
Int. Cl.[3] B31F *5/06*; G03D *15/04*
U.S. Cl. 156—506 17 Claims

17. In a machine for splicing magnetic tape to a leader and winding said leader and magnetic tape on a spool, said machine

including a splicing head with horizontally extending surfaces for supporting magnetic and leader tapes to be spliced,

an improved splicing tape applicator for applying a length of adhesive-coated splicing tape to the said tapes to be spliced, said applicator comprising a carriage disposed above said splicing head, means supporting said carriage for reciprocal straight line movement toward and away from said splicing head, means carried by said carriage for feeding splicing tape, means for operating said splicing tape feeding means only when said carriage is moving away from said splicing head, guide means carried by said carriage for positioning the leading end of said splicing tape as it is being advanced by said feeding means so that it is aligned longitudinally with said splicing head surfaces, selectively operable means for (a) severing a length of splicing tape off of said leading end thereof, (b) propelling said severed length of tape downwardly toward said splicing head and (c) pressing said severed length of tape down onto the ends of magnetic and leader tapes supported by said splicing head surfaces, and means for operating said selectively operable means, said selectively operable means comprising a reciprocable plunger for propelling and pressing said severed length of tape and stationary guide means carried by said carriage for maintaining said severed length of tape aligned with said plunger as said plunger is reciprocated so as to apply said severed length of splicing tape to the said tapes to be spliced.



4,385,960

GLUING APPARATUS FOR A LABELING MACHINE

Rudolf Zodrow, Düsseldorf; Heinz J. Rosenberg, Neuss, and Rainer Buchholz, Düsseldorf, all of Fed. Rep. of Germany, assignors to Jagenberg-Werke AG, Düsseldorf, Fed. Rep. of Germany

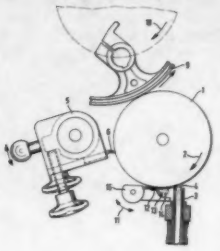
Filed Mar. 30, 1982, Ser. No. 363,696

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1981, 3113980

Int. Cl.³ B65C *9/10, 9/16*

U.S. Cl. 156—568 **1 Claim**

1. In a gluing apparatus for a labeling machine, comprising a glue roller, a doctor blade adjustable with respect to the glue roller periphery and determining the thickness of the layer of glue being applied, a glue feeder disposed ahead of the doctor blade in the direction of rotation of the glue roller, and a glue stripper which can be applied to the periphery of the glue roller, the improvement which comprises disposing the glue stripper between the glue feeder and the doctor blade, and providing a hollow throat-like supporting surface for a glue column adjacent the cutting edge of the glue stripper and



means for moving the stripper from operative to inoperative position.

4,385,961

PAPERMAKING

Per J. Svending, Gothenburg; Per G. Batelson, Lilla Edet; Hans E. Johansson, Kungälv, and Hans M. Larsson, Gothenburg, all of Sweden, assignors to EKA Aktiebolag, Surte, Sweden

Filed Feb. 26, 1981, Ser. No. 238,645

Int. Cl.³ D21H *3/28, 3/66*

U.S. Cl. 162—175 **5 Claims**

1. In a papermaking process in which an aqueous papermaking stock containing a cellulosic pulp is formed into a sheet and dried, said sheet comprising over 50% cellulosic fiber, the stock including a binder comprising colloidal silicic acid having an average particle size of less than 20 nm, and cationic starch having a degree of substitution of between 0.01 and 0.05, the weight ratio of cationic starch to SiO_2 being between 1:1 and 25:1, the weight of solids in the binder being between 0.1–15% by weight of said pulp the improvement which comprises intermixing in the stock first a portion of the colloidal silicic acid and then the cationic starch and after an agglomerate has formed, adding and intermixing the remainder of the colloidal silicic acid in the stock prior to the formation of the sheet, said first portion of colloidal silicic acid comprising 20–90% of the total colloidal silicic acid added.

4,385,962

METHOD FOR THE PRODUCTION OF COKE

Wilhelm Stewen, Dortmund, and Wilhelm Weskamp, Bochum, both of Fed. Rep. of Germany, assignors to Ruhrkohle Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 16, 1981, Ser. No. 274,316

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1980, 3022604

Int. Cl.³ C10B *53/00, 53/08, 57/08*

U.S. Cl. 201—6 **1 Claim**

1. A process for the production of coke comprising

(a) first grinding separately a binder selected from carbopitch, residues of coal oil processing and oil refinery residues; a non-self-feeding coal and a self-feeding coal,

(b) then mixing said binder and said non-self-feeding coal to form a first mixture,

(c) then kneading said first mixture,

(d) then driving off water by heating the product of step (c) to a temperature of about 150° C. to about 250° C,

(e) then further mixing said product,

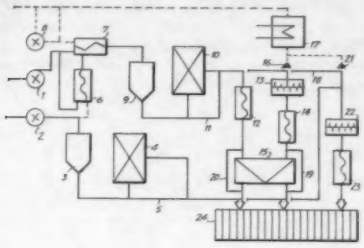
(f) then compacting said product in the form of nuggets or rod compacts, said compacts having a thickness of about 15 to about 30 mm and a length to thickness ratio of about 1:1 to about 3:1,

(g) heating the ground self-feeding coal to about 150° C. to about 250° C.,

(h) mixing the product of step (g) with said compacts to form

a second mixture such that said compacts comprise about 10% by weight to about 60% by weight of said second mixture,

(i) then kneading said second mixture to form a charge and



(j) then heating said charge in a coking oven to form coke, said charge being particles having an average particle size of about 0.5 to about 10.0 mm with about 30 to about 35% of said particles having a size less than about 0.5 mm and about 80 to about 85% of said particles having a size of less than about 3.0 mm.

4,385,963

APPARATUS TO RECEIVE COKE FROM AN OVEN CHAMBER FOR QUENCHING

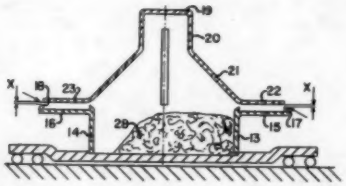
Hans-Jurgen Kwasnik, Herne, and Hans-Gunter Piduch, Bochum, both of Fed. Rep. of Germany, assignors to Dr. C. Otto & Comp. G.m.b.H., Bochum, Fed. Rep. of Germany

Filed Aug. 31, 1981, Ser. No. 298,259

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1980, 3033610

Int. Cl.³ C10B *33/00, 39/14, 41/02*

U.S. Cl. 202—263 **5 Claims**



1. In combination, a coke quenching car movable on a track extending along the coke discharge side of a battery of coke ovens and adapted to receive a coke cake during a coke pushing operation while said car moves along said track, the quenching car having side walls and front and rear end walls, a first pair of essentially horizontal sealing plates extending outwardly from the upper edges of the front and rear end walls of the quenching car, a smoke collector hood for conducting a coke cake discharged from a coke oven chamber through a fall space into said quenching car, the hood having side walls whose bottom extremities are slightly spaced from the tops of the side walls of said quenching car to provide a gap therebetween, end walls for the hood, and a second pair of essentially horizontal sealing plates extending from the bottom edges of said hood end walls and overlying said first pair of sealing plates while leaving a gap therebetween, each of said sealing plates having a length of at least s/2 where s is the distance covered by the quenching car during a pushing operation, whereby the interior of said quenching car is closed off during the entirety of the pushing operation while the car moves under the hood except for said gaps which allow for the entry of a small quantity of air into the smoke hood during the coke pushing operation.

4,385,964

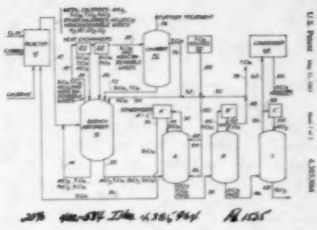
METHOD FOR PREVENTING THE UNDESIRABLE CONDENSATION OF ALUMINUM CHLORIDE IN A FRACTIONAL DISTILLATION COLUMN

Roger C. Johnson, Randolph, N.J.; Donald L. Stewart, Jr., Greensburg, Pa.; Utah Tsao, Jersey City, N.J., and David A. Wohleber, Lower Burrell, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation of Ser. No. 246,022, Mar. 20, 1981, abandoned, which is a continuation-in-part of Ser. No. 40,945, May 21, 1979, abandoned. This application May 26, 1982, Ser. No. 382,312

Int. Cl.³ B01D *3/14*

U.S. Cl. 203—50 **18 Claims**



6. A process for the separation and recovery of $AlCl_3$ from a mixture containing metal chlorides including $AlCl_3$, $FeCl_3$, $SiCl_4$ and $TiCl_4$ comprising:

(a) introducing the mixture into a first distillation column operated at temperatures and pressures sufficient to separate $SiCl_4$ by distillation from the mixture;

(b) introducing the undistilled chlorides from the first column into a second distillation column operated at temperatures and pressures sufficient to separate $TiCl_4$ by distillation from the remainder of the chlorides;

(c) adding liquid $TiCl_4$ to the first ccolumn in an amount, at least as great, by weight, as the amount of $AlCl_3$ contained in the mixture sufficient to prevent solidification of $AlCl_3$ in the first column;

(d) introducing the undistilled chlorides from the second column into a third column to distill $AlCl_3$ from the remaining chlorides; and

(e) recovering purified $AlCl_3$ by condensing the $AlCl_3$ vapors distilled from the third column.

4,385,965

PROCESS FOR THE RECOVERY OF PURE METHYLAL FROM METHANOL-METHYLAL MIXTURES

Wolfgang H. E. Müller, and Manfred Kaufhold, both of Marl, Fed. Rep. of Germany, assignors to Chemische Werke Huls A.G., Marl, Fed. Rep. of Germany

Filed Jan. 26, 1982, Ser. No. 342,975

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1981, 3147320

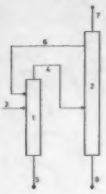
Int. Cl.³ B01D *3/26*

U.S. Cl. 203—75 **24 Claims**

1. A process for the recovery of pure methylal from a feed mixture containing methanol and methylal, said process comprising: rectifying the feed mixture in a first stage to obtain a methylal-rich and methanol-poor distillate, and a substantially methylal-free and methanol-rich sump product; feeding the methylal-rich distillate of the first rectification into a second rectification stage and rectifying the distillate under a higher pressure than the first rectification to obtain a compound stream consisting essentially of methanol and methylal, and a pure methylal sump product; and recycling the compound stream into the first rectification said feed mixture and said compound streams being the only streams fed to said first stage and said methylal-rich distillate being the only stream fed to said second rectification stage.

13. A process for the recovery of pure methylal from a feed mixture containing methanol and methylal, said process com-

prising: rectifying the feed mixture in a first stage to obtain a methylal-rich and methanol-poor distillate, and a substantially methylal-free and methanol-rich sump product; feeding the methylal-rich distillate of the first rectification into a second rectification stage and rectifying the distillate under a higher pressure than the first rectification to obtain a compound



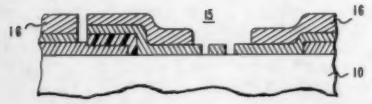
stream comprising methanol and methylal, and a pure methylal sump product; recycling the compound stream into the frist rectification; said feed mixture and said compound streams being the only streams fed to said first stage and said methylal-rich distillate being the only stream fed to said second rectification stage.

4,385,966

FABRICATION OF THIN FILM RESISTORS AND CAPACITORS

Harry N. Keller, Center Valley; Joseph M. Morabito, Bethlehem, and Raymond C. Pitetti, Wescosville, all of Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 7, 1980, Ser. No. 194,881
Int. Cl.³ C25D *11/02, 11/18*
U.S. Cl. 204—15 **6 Claims**



1. A method for fabricating a thin film circuit on an insulating substrate (10) comprising the steps of forming a thin film resistor (15) and thin film capacitor (12, 13, 14, 16) on said substrate; and stabilizing the resistor and capacitor by heating in an oxidizing atmosphere CHARACTERIZED IN THAT the resistor and capacitor are simultaneously stabilized by heating in an atmosphere comprising steam at a temperature within the range 250–350 degrees C. for a time within the range 10 min.-20 hours and a pressure within the range 590–2400 psi.

4,385,967

ELECTROPLATING APPARATUS AND METHOD

Joseph M. Brady, Huntingdon; Franz R. Cordes, State College, both of Pa.; Klaus H. Gedrat, Berlin, Fed. Rep. of Germany; Daniel L. Goffredo, Riverton, N.J.; Walter Meyer, Berlin, Fed. Rep. of Germany, and Conrad D. Shakley, Spring Mills, Pa., assignors to Chemcut Corporation, State College, Pa.

Filed Oct. 7, 1981, Ser. No. 309,180
Int. Cl.³ C25D *7/06, 17/06, 17/28, 21/10*
U.S. Cl. 204—27 **20 Claims**

1. Apparatus for electroplating discrete generally planar workpieces comprising:

means defining a bath zone of electrolyte solution;

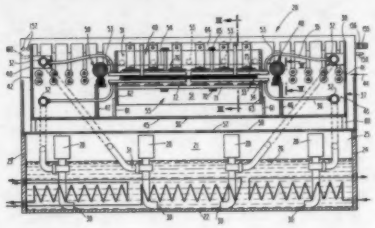
conveying means for delivering the discrete planar workpieces through the bath zone in a continuous motion along a generally horizontal flow path submerged in the bath zone and with the workpieces in generally horizontal disposition;

anode electrode means in said bath zone;

cathode electrode means in said bath zone;

and means for generating an electrical potential between said anode electrode means and said cathode electrode means;

said conveying means including a plurality of continuously driven contact wheels disposed along said flow path; said wheels comprising one of said electrode means; said wheels further comprising means for



(a) automatically and serially engaging the workpieces for delivery along the path and for automatically and serially releasing the workpieces as they are delivered along the path, and

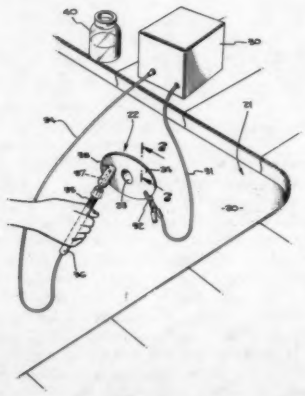
(b) automatically and serially making clamping electrical connection with said workpieces and automatically and serially releasing the workpieces from electrical connection as they are delivered along the path.

4,385,968

ELECTROPLATING A SIMULATED BRIGHT BRASS FINISH

David E. Gaston, Reseda, Calif., assignor to Brooktronics Engineering Corporation, North Hollywood, Calif.

Continuation of Ser. No. 143,820, Apr. 23, 1980, abandoned.
This application Sep. 16, 1981, Ser. No. 302,804
Int. Cl.³ C25D *5/06, 5/10, 5/34, 5/52*
U.S. Cl. 204—36 **1 Claim**



1. The method of brush plating a metallic member to provide an ornamental and corrosion-free surface having the appearance of bright brass comprising the steps of:

selecting a metallic workpiece to be brush plated;

electroplating a preplate coating of bright nickel on said workpiece;

preparing an aqueous alkaline brush plating electrolyte solu-

tion including gold and silver in the proportion of about 8 to 1 parts by weight and also including either cobalt cyanide or nickel cyanide;

applying said electrolyte solution to said workpiece by brushing said electrolyte solution on said workpiece with an applicator which comprises a carbon rod in the presence of an electric current using an applied plating voltage of about six to seven and one half volts to electroplate a coating of gold-silver alloy on said workpiece;

the proportions of gold to silver in said alloy being about 5 to 4 parts by weight, said alloy also including a small amount of cobalt or nickel, the thickness of said coating being no more than about one ten-thousandth of an inch;

rinsing and polishing said coating to produce a smooth surface on said coating; and

repeating and applying, rinsing and polishing steps at least once to produce a coating having a thickness of approximately one ten-thousandth of an inch

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4,385,969

METHOD OF REGENERATING AN AMMONIACAL ETCHING SOLUTION

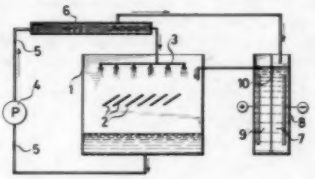
Bertel Kastening, Hamburg; Wolfgang Faul; Leander Fürst, both of Jülich, and Walter Holzer, Meersburg, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellaschaft mit beschränkter Haftung, Jülich and Elo-Chem Atztechnik GmbH, Meersburg, both of, Fed. Rep. of Germany

Filed Jul. 27, 1981, Ser. No. 287,492

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1980, 3031567

Int. Cl.³ C25C *1/12, 1/00, 1/16*

U.S. Cl. 204—105 R **6 Claims**



1. Method of regenerating an ammoniacal etching solution to which oxygen is supplied for reoxidation of the etching agent contained in said solution, comprising the steps of:

calcining activated carbon particles at a temperature between 900° C. and 1200° C. in vacuum or in an atmosphere which is inert, or reducing or contains CO_2 or water vapor or both;

allowing said carbon particles to cool in vacuum or said atmosphere, and

suspending said particles in said etching solution before or while oxygen is supplied to said solution for reoxidation of spent etching agent therein.

4,385,970

SPONTANEOUS DEPOSITION OF METALS USING FUEL FED CATALYTIC ELECTRODE

Alvin Skopp, Scotch Plains; George Ciprios, Freehold, and John S. Batzold, Union, all of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

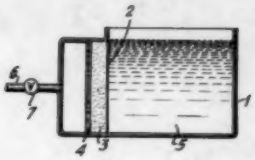
Filed Oct. 14, 1980, Ser. No. 196,475

Int. Cl.³ C25B *11/03, 11/04, 11/06;* C25C *1/12*

U.S. Cl. 204—108 **9 Claims**

1. A process for recovery of metals of oxidation potential below hydrogen from acid solutions thereof comprising:

proving a porous electrically conducting substrate having a first surface and a second surface, said substrate having a porosity such that under conditions of use the current density is sufficiently high that metal ions will be depleted near said second surface, providing an active hydrogen ionizing catalyst soley in contact with said first surface of said substrate;



contacting said second surface with said acid solution while feeding a fuel to said first surface whereby electric current is generated and metal is deposited from said solution on said second surface.

4,385,971

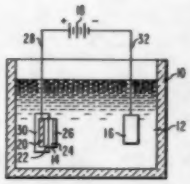
ELECTROLYTIC ETCH FOR ELIMINATING SHORTS AND SHUNTS IN LARGE AREA AMORPHOUS SILICON SOLAR CELLS

George A. Swartz, North Brunswick, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 26, 1981, Ser. No. 277,983

Int. Cl.³ H01L *31/18;* C25F *3/12*

U.S. Cl. 204—129.1 **4 Claims**



1. A method for improving the performance of an amorphous silicon solar cell which incorporates a highly conductive electrode contacting one of the layers of the solar cell, comprising the step of applying a reverse bias voltage to said highly conductive layer while said solar cell is immersed in an electrolyte, said reverse bias voltage being applied through said electrolyte, whereby shorts or shunts in said solar cell are removed by an electrolytic etch of said solar cell.

4,385,972

ELECTROLYTIC DISINTEGRATION OF SINTERED METAL CARBIDES

Clarence D. Vanderpool, Towanda, Pa., assignor to GTE Products Corporation, Stamford, Conn.

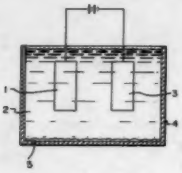
Continuation of Ser. No. 75,622, Sep. 14, 1979, abandoned. This application Dec. 18, 1981, Ser. No. 332,399

Int. Cl.³ C25F *5/00*

U.S. Cl. 204—146 **4 Claims**

1. A method of disintegrating a sintered metal carbide, which comprises subjecting the sintered metal carbide to electrolysis at a suitable amperage and current in a solution of soluble alkali metal hydroxide using as the anode in the solution the sintered metal carbide, said metal carbide consisting essentially of a metal cemented together by a metal consisting essentially of cobalt, iron, nickel or alloy thereof and alkali

metal hydroxide being present in an amount sufficient to form an electrolyte and retard the formation of oxides whereby the



sintered metal carbide is disintegrated to metal carbide particles which precipitate from solution.

4,385,973

PROCESS FOR DISINFECTING WATER

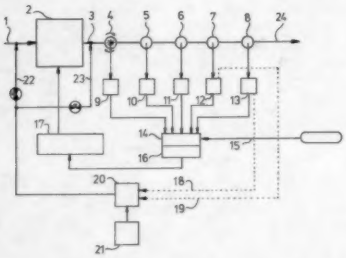
August K. Reis, Faistenbergerstr. 1, 8000 München 90, Fed. Rep. of Germany; Norbert L. Kirmaier, Aschheim, and Meinolf H. A. Schöberl, Prien, both of Fed. Rep. of Germany, assignors to August K. Reis, Munich, Fed. Rep. of Germany

Filed Feb. 1, 1980, Ser. No. 117,810

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1979, 2935124

Int. Cl.[3] **C02F** *1/46;* **E04H** *3/16*

U.S. Cl. 204—149 **7 Claims**



1. The process for disinfecting water by anodic oxidation for delivery to a swimming pool comprising in a closed circuit embodying a reactor and plumbing for delivering disinfectant water from the reactor to the pool and for returning water from the pool to the reactor, passing the water through the reactor at a predetermined volumetric rate and treated with a predetermined current density for a predetermined contact time, the contact time and the current density being selected so that an excess of reaction products having oxidizing power is present in the water flowing from the reactor through the plumbing to the pool wherein at least one of the following water parameters; volumetric rate, content of free chlorine, content of oxygen, pH-value, conductivity value or redox potential is measured, the values of which are processed in a computer in case of deviation from set values in order to adjust current density, volumentric rate or both.

4,385,974

ELECTROPHORETIC SYSTEM AND METHOD FOR MULTIDIMENSIONAL ANALYSIS

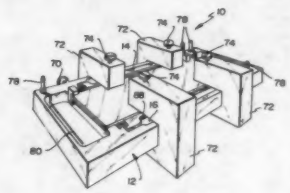
Jerry Shevitz, 9 Alcott Dr., Livingston, N.J. 07039

Filed Jun. 24, 1982, Ser. No. 391,535

Int. Cl.[3] **B01D** *57/02;* **G01N** *27/26, 27/30*

U.S. Cl. 204—180 G **18 Claims**

1. An apparatus for conducting electrophoretic analysis, the apparatus comprising means for supporting an electrophoresis gel slab, the gel slab including a separation path comprising a first gel and defined by the space between a pair of parallel gel plates and a pair of barrier webs, the gel slab further including a second gel positioned in the space between the gel plates and adjacent at least one barrier web, the apparatus further comprising means forming a first pair of tanks for carrying an electrolytic solution and electrode means communicating with the electrolytic solution in each tank, means accessing the solution of each tank to opposite ends of the separation path, means for accessing the barrier webs for aspiration of the barrier webs from the gel slab after electrophoretic separation of a specimen in the separation path, the accessing means including means for permitting the infusion of an equilibrating



medium into the spaces between the gel plates previously occupied by the barrier webs, the apparatus further including a second pair of tanks for carrying an electrolytic solution and electrode means communicating with the solution in each of the tanks of the second pair, means for accessing the solution of each tank of the second pair with the second gel, the specimen particles separated in the separation path being further separated by particle size in the second gel when an electrical potential is applied between the solutions in each of the tanks of the second pair, whereby two dimensional electrophoretic analysis is obtained without the necessity of manipulating the gel of the separation path.

4,385,975

METHOD OF FORMING WIDE, DEEP DIELECTRIC FILLED ISOLATION TRENCHES IN THE SURFACE OF A SILICON SEMICONDUCTOR SUBSTRATE

Shao-Fu Chu, Hopewell Junction, N.Y.; Allen P. Ho, Sunnyvale; Cheng T. Horng, San Jose, both of Calif., and Bernard M. Kemlage, Kingston, N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Dec. 30, 1981, Ser. No. 336,109

Int. Cl.[3] **C23C** *15/00*

U.S. Cl. 204—192 E **17 Claims**

1. A method of forming a wide deep dielectric filled isolation trench in the surface of a silicon semiconductor substrate comprising the steps of:

forming a wide deep trench in the surface of the silicon substrate,

forming a dielectric plug in said trench by chemical vapor depositing a first layer of dielectric material on the surface of the silicon substrate including said trench, masking at least a portion of said first layer in said trench, and etching said first layer down to the top of said trench,

chemical vapor depositing a second layer of dielectric material on the surface of the silicon substrate including said trench, and

etching said second layer down to the top of said trench.

4,385,976

SOLDERABLE LAYER SYSTEM, ITS USE AND METHOD FOR MANUFACTURING SAME

Hans Schuster-Woldan, Wörthsee; Helmut Freller, Rüthenbach; Hans Krüger, Munich; Wolfgang Welsch, Baldham; Andre Peetermans, Poing; Hans J. Rölke, Munich, and Peter Schack, Nuremberg, all of Fed. Rep. of Germany, assignors to Siemens AG, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 23, 1982, Ser. No. 410,467

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1981, 3136794

Int. Cl.³ C23C 15/00; G02F 1/13

U.S. Cl. 204—192 P 21 Claims

1. Method for the preparation of a solderable layer system with an electrically conductive layer which comprises first applying in a vacuum an electrically conductive layer of a completely oxidized metal selected from the group consisting of In_2O_3 and SnO_2, to a support, then applying, likewise in a vacuum, a solderable layer to the electrically conductive layer, and maintaining a vacuum on the support and applied electrically conductive layer during the entire period between the first application of the conductive layer and the second application of the solderable layer.

4,385,977

APPARATUS FOR ELECTROPLATING A METAL WIRE OF RELATIVELY LOW ELECTRIC CONDUCTIVITY

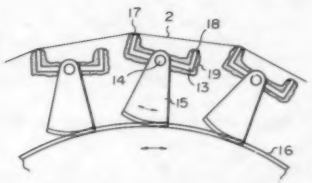
Masami Kobayashi, 3-13-15, Hachimanyama, Setagaya-ku, Tokyo, Japan

Filed Apr. 16, 1982, Ser. No. 369,081

Claims priority, application Japan, Nov. 25, 1981, 56-187789

Int. Cl.³ C25D 7/06, 13/00, 13/16

U.S. Cl. 204—206 5 Claims



1. An apparatus for electroplating a metal wire of a relatively low electric conductivity, said wire being wound onto a cylindrical frame means which is adapted to be dipped in an electroplating solution which is electrically connected to a positive pole of an electric source, said frame means comprising:

a plurality of frame elements adapted for being connected to a negative pole of the electric source, said frame elements extending parallel to a center axis of said cylindrical frame means to form a substantial cylindrical outer surface onto which said wire is wound so as to directly contact each of said frame elements;

means for rocking each of said frame elements about an axis parallel to said center axis in order that contact points can be changed between said frame elements and said wire;

and means for supporting said frame elements to permit said rocking motion.

4,385,978

CATHODE HEAD

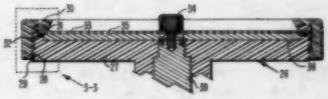
John J. Prusak, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 14, 1981, Ser. No. 302,151

Int. Cl.³ C25D 1/10, 17/06

U.S. Cl. 204—281 3 Claims

1. A cathode head for holding a flat record matrix of a first diameter during electroforming of a replica of a second diameter on the surface of the matrix, said cathode head comprising in combination: a disc shaped support member, a cathode plate, and a lock ring member, said support member being made of a dielectric material and being of a diameter at least as large as said first diameter and having a circular cavity defined in a face thereof having a diameter of at least the second diameter but less than the diameter of the support member, said cathode plate being a disc-shaped member comprised of an electrically conductive material selected from the group consisting of stainless steel, nickel, and titanium and being of a thickness sufficient to reduce the current density during electroforming a replica on the matrix so as to prevent burn outs of said matrix



during electroforming, said cathode plate further having a flat face portion and a configuration which mates with the configuration of said cavity, said cathode plate being positioned within said cavity with the flat face portion positioned so as to receive said matrix; said lock ring member being made of a dielectric material and having means for engaging and locking in a liquid-tight seal on the outer edge of said disc-shaped member and having an inner diameter of said second diameter whereby when a matrix is placed on the flat faced portion of the cathode plate and the lock ring member is engaged and tightened on the disc-shaped member the matrix is forced into liquid-tight electrical contact with the cathode plate.

4,385,979

TARGET ASSEMBLIES OF SPECIAL MATERIALS FOR USE IN SPUTTER COATING APPARATUS

Danny A. Pierce, Columbus; Joseph A. Heisler, Timberlake, and Roger D. Self, Mount Sterling, all of Ohio, assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Jul. 9, 1982, Ser. No. 396,580

Int. Cl.³ C23C 15/00

U.S. Cl. 204—298 13 Claims

1. A sputter target assembly for use in sputter coating sources of the type having a cooled wall against which a sputter target expands for cooling the target material, said sputter target assembly comprising:

an annular sputter target made of a special material to be sputtered;

said sputter target having an outer wall of substantial height;

a retaining member comprising a retaining band surrounding said outer wall of said sputter target;

said retaining band being of a different material than said sputter target; and

a thermally conductive and physically confining bonding means between said retaining band and said outer wall of said sputter target.

4,385,980

COAL TREATING PROCESS

Matthew C. Sooter, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.

Filed Feb. 26, 1981, Ser. No. 238,296

Int. Cl.³ C10G 1/00, 9/14

U.S. Cl. 208—8 LE 4 Claims

1. A process for treating coal to produce hydrocarbon liquids and delayed coke therefrom comprising:

(a) combining particulate coal and a hydrogen donor atmospheric pressure and at a temperature below about 100° C.

(b) passing the combined coal and solvent directly, without any solids removal step, to a furnace where the combined material is heated to delayed coking temperature;

(c) passing liquid and undissolved coal from the furnace to a delayed coking drum;
(d) passing vapor from the coking drum to a distillation tower;
(e) recovering green delayed coke from the coking drum and passing the coke to a vertical shaft calciner;
(f) calcining the coke in the upper portion of the calciner;
(g) contacting hot calcined coke with steam in the lower portion of the calciner to produce hydrogen herefrom;
(h) recovering a relcycle gas oil stream from the distillation tower;
(i) utilizing hydrogen produced in the calciner to hydrogenate the recycle gas oil stream; and
(j) utilizing the hydrogenated recycle gas oil stream as the hydrogen donor solvent in step (a).

4,385,981

LIQUEFACTION OF CARBONOUS MATERIALS WITH VAPOR PHASE HYDROGEN DONOR SOLVENTS

Daniel R. Neskora, Westfield, and Richard H. Schlosberg, New Providence, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 172,369, Jul. 25, 1980, abandoned. This application Apr. 20, 1981, Ser. No. 255,569

Int. Cl.³ C10G *1/00*

U.S. Cl. 208—8 R **7 Claims**

1. A method for enhancing the conversion of carbonous materials to liquids wherein the carbonous material is selected from the group consisting of coal, oil shale, peat and solid products thereof, the method which comprises converting the carbonous material:
(a) in the presence of a hydrogen donor material, in the vapor phase, said donor material characterized by (aa) a heterocyclic ring in which the heteroatom is nitrogen, (ab) having at least one donatable hydrogen located on the heterocyclic ring, and (ac) becoming more aromatic upon the loss of the donated hydrogen(s); and
(b) at a temperature from about 350° C. to about 550° C.; and
(c) at substantially atmospheric pressure; and
(d) at a vapor residence time from about 0.1 to about 30 seconds.

4,385,982

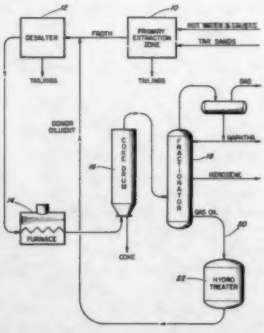
PROCESS FOR RECOVERY OF BITUMEN FROM TAR SANDS

Ardis L. Anderson, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.

Filed May 14, 1981, Ser. No. 263,631

Int. Cl.³ C07G *1/00, 1/06*

U.S. Cl. 208—11 LE **1 Claim**



1. A process for recovering bitumen from tar sands comprising:
(a) subjecting tar sands to a primary extraction step;
(b) recovering a bitumen-containing froth from said primary extraction step;
(c) adding a hydrogen donor diluent solvent to said froth;
(d) subjecting said froth and added hydrogen donor diluent solvent to a desalting step;
(e) passing bitumen and hydrogen donor diluent solvent from said desalting step to a delayed coking operation;
(f) recovering overhead vapors from said delayed coking operation and fractionating said vapors;
(g) recovering a gas oil fraction from said fractionating step;
(h) hydrotreating said gas oil fraction to produce a hydrogen donor diluent solvent; and
(i) utilizing said hydrogen donor diluent solvent as the solvent added to said froth in step (c).

4,385,983

PROCESS FOR RETORTING OIL SHALE MIXTURES WITH ADDED CARBONACEOUS MATERIAL

Joel W. Rosenthal, El Cerrito, and P. Henrik Wallman, Berkeley, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Aug. 10, 1981, Ser. No. 291,695

Int. Cl.³ C10B *53/06, 49/00, 49/10*

U.S. Cl. 208—11 R **12 Claims**

1. A process for retorting oil shale comprising:
(a) heating said oil shale in a retort zone to evolve hydrocarbonaceous vapors therefrom, thereby producing retorted shale;
(b) adding carbonaceous material and a combustion catalyst to the retorted shale, the amount of combustion catalyst being sufficient to increase the combustion rate of the added carbonaceous material to near or above the combustion rate of the retorted shale;
(c) burning the retorted shale, added carbonaceous material in the presence of the added combustion catalyst in a combustion zone; and
(d) transferring heat from the combustion zone to heat the oil shale.

4,385,984

LUBRICATING BASE OIL COMPOSITIONS

Henricus M. J. Bijwaard, and Alphonsus Morcus, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jul. 9, 1981, Ser. No. 281,802

Claims priority, application Netherlands, Sep. 9, 1980, 8005071

Int. Cl.³ E10G *45/00*

U.S. Cl. 208—19 **6 Claims**

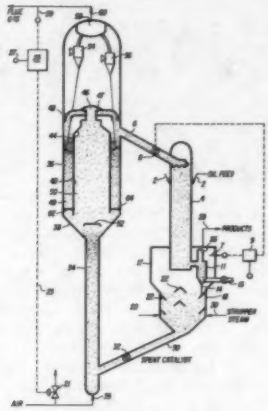
1. Lubricating oil compositions comprising:
(a) a lubricating base oil prepared from a vacuum distillate, a deasphalted vacuum residue or a mixture thereof, by applying to it a catalytic hydrotreatment under such severe catalytic hydrotreatment conditions that a sulfur content reduction of more than 90% is reached, and
(b) 0.01 to 20%w, calculated on the weight of said base oil, of an additive oil prepared from a vacuum distillate, a deasphalted vacuum residue or a mixture thereof, by applying to it a combination of a mild catalytic hydrotreatment and a solvent extraction, wherein said solvent extraction reduces the polyaromatic content of said vacuum distillate, deasphalted vacuum residue or mixture thereof, and which catalytic hydrotreatment has been carried out under such conditions that a sulfur content reduction of less than 75% is reached.

4,385,985

FCC REACTOR WITH A DOWNFLOW REACTOR RISER

Benjamin Gross, Cherry Hill, and Michael P. Ramage, Moorestown, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 14, 1981, Ser. No. 254,329
Int. Cl.³ C10G 11/18
U.S. Cl. 208—113 9 Claims



1. In a fluid catalytic cracking process comprising admixing a hydrocarbonaceous feed with a regenerated catalyst in a substantially vertically-positioned transport reactor of a reactor vessel, passing the hydrocarbonaceous feed and the catalyst admixed therewith through the transport reactor, thereby effecting cracking of the hydrocarbonaceous feed at the process temperature under endothermic process conditions and deactivating the catalyst by deposition of carbon-containing material thereon, separating the deactivated catalyst from the cracked hydrocarbonaceous feed, passing the deactivated catalyst to a regenerator vessel wherein the carbon-containing material is removed from the deactivated catalyst, thereby regenerating and heating the catalyst, and passing the regenerated hot catalyst to the transport reactor, the improvement wherein:

the hydrocarbonaceous feed is admixed with the regenerated catalyst in the top section of the transport reactor attached to the top section of the reactor vessel, thereby forcing the catalyst to flow in a substantially downward direction in the transport reactor and maintaining transport reactor inlet pressure substantially constant;

maintaining the admixture of the feed and the catalyst in the transport reactor for 0.2 to 10 seconds, thereby deactivating the catalyst;

regenerating the deactivated catalyst in a regeneration vessel physically separated and distinct from the reactor vessel, the regeneration method comprising

forming a suspension of deactivated catalyst particles in a gaseous material passing upwardly through a regeneration vessel cylindrical combustion zone,

recovering regenerated catalyst in an annular zone of the regeneration vessel, surrounding the cylindrical zone, passing the regenerated catalyst from the bottom of the annular zone into admixture with the catalyst suspension passing into the cylindrical combustion zone,

passing the thus-formed admixture of the regenerated and the deactivated catalyst particles upwardly through the combustion zone to burn the carbon-containing material and heating the catalyst particles to a temperature above about 1200° F., thereby regenerating the deactivated catalyst particles,

passing at least a portion of the regenerated catalyst particles to the top section of the transport reactor, and

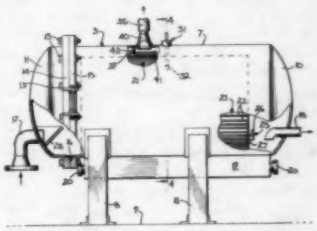
maintaining a catalyst head of pressure between the annular zone and the cylindrical zone of the regeneration vessel to maintain a flow of the remaining hot regenerated catalyst from the annular zone into the bottom open end of the cylindrical zone to form the admixture of the regenerated and the deactivated catalyst particles.

4,385,986

GRAVITY SEPARATOR FOR SEPARATING LIQUIDS

Rajan A. Jaisinghani, Stoughton, Wis., and Gregory S. Spreuger, Greenville, Tenn., assignors to Nelson Industries, Inc., Stoughton, Wis.

Filed Apr. 8, 1981, Ser. No. 252,020
Int. Cl.³ B01D 21/00
U.S. Cl. 210—123 2 Claims



1. An apparatus for separating liquids of different specific gravities, comprising a cylindrical vessel having an inlet and having an outlet, means to introduce a mixture of a first heavier liquid and a second lighter liquid to said inlet, a generally cylindrical assembly of spaced generally parallel inclined separator plates removably disposed within the vessel for separating said lighter liquid from the heavier liquid, said plates being inclined to the horizontal and said plates being disposed generally parallel to a longitudinal plane extending along the axis of the cylindrical vessel, the diameter of said cylindrical assembly being slightly less than the internal diameter of said vessel, each of said plates being generally rectangular in shape, said plates having substantially the same length and having different widths to provide the cylindrical configuration for said plate assembly, one of said liquids being collected as a layer in a portion of said vessel and the other of said liquids being discharged from said vessel through said outlet, drain means connected to said portion of the vessel for draining said collected layer, a baffle disposed in spaced alignment with said drain means to prevent the other of said liquids from being discharged through said drain means, valve means disposed to open and close said drain means, and liquid level sensing means disposed in the vessel and responsive to a given depth of said collected layer to open said valve means and drain said collected layer from the vessel, said liquid level sensing means comprising a probe, said separator plates being provided with aligned openings and said probe extending within said aligned openings.

4,385,987

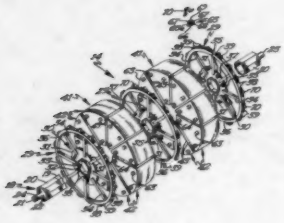
WATER TREATMENT APPARATUS

Charles M. McGinley, Stillwater; Arlen R. Schamber, Minneapolis; Denny L. Melin, Anoka; Ronald L. Christensen, Maple Grove, all of Minn.; Edward K. Tazzia, East Detroit, Mich.; Richard W. Hackbarth, Roseville, Minn.; Terry M. Fogarty, Lakeland, Minn., and Richard C. Faint, Bloomington, Minn., assignors to Geo. A. Hormel & Company, Austin, Minn.

Continuation of Ser. No. 74,347, Sep. 11, 1979, abandoned. This application Nov. 18, 1980, Ser. No. 207,870

Int. Cl.[3] C02F *3/18*

U.S. Cl. 210—150 11 Claims



1. Apparatus for treating waste water contained within a tank, comprising:

a revolvable, biological treatment assembly including an elongate shaft extending between opposite wall portions of the tank, means on the tank revolvably mounting the end portions of said shaft,

a plurality of similar nonmetallic discs positioned along said shaft and each disc having inner and outer edges, means interconnecting said discs with said shaft for rotation therewith,

a pair of generally circular rigid end support members each being positioned adjacent one of the endmost discs, a circular rigid intermediate support member disposed between a pair of said discs, means to said support members,

each of said disc including a plurality of similar disc sections each having an inner arcuate edge, an outer arcuate edge, and substantially straight side edges converging from the outer arcuate edge thereof, each disc section having a surface configuration defining a plurality of radially spaced apart arcuate ribs projecting axially from one surface of the disc section and extending from adjacent one side edge thereof to adjacent the other side edge thereof, a plurality of arcuate channels located between adjacent arcuate ribs and projecting axially from the other surface of each disc section and extending from adjacent one side edge thereof to adjacent the other side edge thereof, transverse channels in each rib interconnecting adjacent arcuate channels of each disc section,

said ribs and channels of each disc being concentrically arranged from adjacent the inner edge thereof to adjacent the outer edge thereof, each rib having a cross-sectional configuration substantially defining an acute angle having an arcuate apex, each arcuate channel having a cross-sectional substantially defining a curve whereby each rib and each channel of one disc projects into and is spaced from a rib and channel on the next adjacent disc to define concentric passage between adjacent discs,

and means for rotating said shaft.

4,385,988

PACKING ELEMENT FOR A BIOLOGICAL FILTER OR FOR USE IN MASS TRANSFER

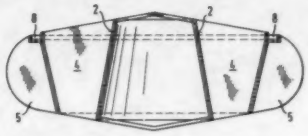
Alpo Hyppönen, 6 kp, 37380 Viiala, Finland

Filed Feb. 18, 1982, Ser. No. 349,868

Claims priority, application Finland, Feb. 20, 1981, 810534

Int. Cl.[3] B01F *3/04*

U.S. Cl. 210—150 8 Claims



1. A packing element for a biological filter or for use in mass transfer, said packing element having a center portion and a vertical axis associated therewith, said center portion additionally having an apex angle associated therewith, and said element additionally having a height and an outer dimension associated therewith, wherein said packing element comprises a multiplicity of trickling faces, and wherein the liquid or gas to be treated is arranged to flow along said trickling faces of said packing element in contact with another medium, said trickling faces having relatively large wettable surface areas and being angled at about 3° to about 40° with respect to said vertical axis of the element, characterized in that said height of said packing element is about 20% to about 60% of said outer dimension of said element, the maximum value of said height being at the center portion of the element, and further characterized in that the outer periphery of said element is provided with rounded portions projecting outwardly beyond said periphery.

4. A packing element for a biological filter or for use in mass transfer, said packing element having a center portion and a vertical axis associated therewith, said center portion additionally having an apex angle associated therewith, and said element additionally having a height and an outer dimension associated therewith, wherein said packing element comprises at least one rim upon which at least one of a multiplicity of trickling faces is disposed, and wherein the liquid or gas to be treated is arranged to flow along said trickling faces in contact with another medium, said trickling faces having relatively large wettable surface areas and being angled at about 3° to about 40° with respect to said vertical axis, characterized in that said height of said packing element is about 20% to about 60% of said outer dimension of said element, the maximum value of said height being at said center portion of said element, and further characterized in that at least one of said at least one rim has a ductlike member provided at the top edge thereof forming a duct along the outer periphery of said rim.

4,385,989

FILTER ASSEMBLY AND CARTRIDGE THEREFOR

Jerry Margolis, Jackson Heights, N.Y., assignor to Metaframe, Inc., Irvington, N.J.

Filed Sep. 16, 1981, Ser. No. 302,540

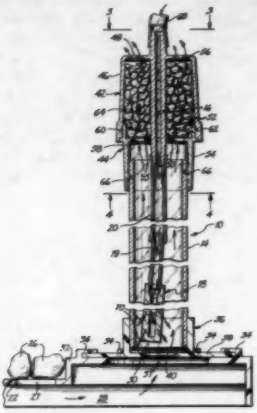
Int. Cl.[3] C02F *1/74*

U.S. Cl. 210—169 9 Claims

1. In a filter cartridge for a filter assembly of the type including an airlift tube, said filter cartridge being of the type comprising: a housing defining a chamber for a filter medium, said housing having top and bottom walls provided with openings, and a sidewall extending between said top and bottom walls; and means for releasably securing the cartridge to the airlift tube with the bottom wall of the cartridge disposed over the top of the airlift tube, the improvement comprising;

a tubular member carried by and extending through said housing, one end of said tubular member extending through said bottom wall of said cartridge for connection

to an aerator disposed in said airlift tube, the other end of said tubular member protruding from said housing and



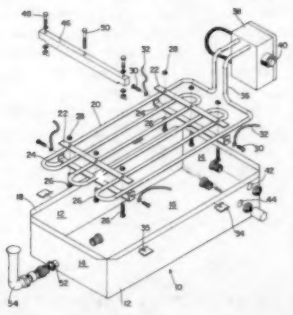
being adapted for operative connection to air supply means whereby air flow to said aerator is accommodated through said filter cartridge via said tubular member.

4,385,990

SEPARATOR FOR HONEY AND WAX

David B. Cale, Hamilton, Ill., assignor to Dadant & Sons Inc., Hamilton, Ill.

Filed Dec. 29, 1981, Ser. No. 335,552
Int. Cl.³ B01D *35/18*
U.S. Cl. 210—187 **1 Claim**



1. A device for separating beeswax and honey which comprises in combination:

(a) an open-topped rectangular container having a bottom and upstanding sidewalls, the upper perimeter of said container being provided with outwardly extending flange sections (**18**) that are generally parallel with the bottom (**16**) of the container,

(b) a heating means including

(1) a sinuous electrical heating coil section (**20**) generally disposed in a horizontal plane generally parallel to the bottom (**16**) of the container,

(2) a heat control means (**38**) attached to said electrical heating coil for controlling the electrical heat input to the heating coil,

(3) said heat control means (**38**) being connected to said heating coil (**20**) by a cold leg section (**36**), said cold leg section containing no resistance element so that it in effect can function as a handle to lift the heating coil section in and out of said container,

(c) support means for supporting said sinuous electrical heating coil section at the desired position within said container sidewalls and intermediate the top and bottom of said container, said support means including:

(1) two sets of coil clamping members (**22,24**) that extend across spaced apart portions of said heating coil section (**20**) and generally perpindicular thereto,

(2) a flexible chain (**32**) extending between each end of each set of coil clamping members (**22,24**) and an anchor point on the nearest sidewall (**12**), whereby by selection of a link in said flexible chain (**32**) to engage an anchoring point (**34, 35**) the height of the heating coil section (**20**) above the bottom of the container can be varied,

(d) at least one outlet for melted beeswax located in one sidewall of said container, and

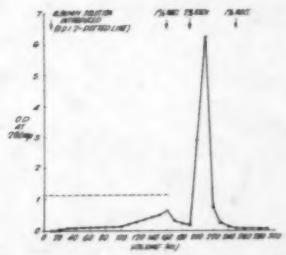
(e) an outlet for liquid honey located in a sidewall of said container, said honey outlet being located closer to the bottom of the container than said melted beeswax outlet.

4,385,991

AFFINITY CHROMATOGRAPHY SEPARATION PROCESS

Alan Rosevear, Faringdon, and Patrick Mattock, Botley, both of England, assignors to United Kingdom Atomic Energy Authority, England

Continuation of Ser. No. 28,595, Apr. 9, 1979, abandoned, which is a continuation of Ser. No. 858,749, Dec. 8, 1977, abandoned. This application Oct. 1, 1980, Ser. No. 192,831
Claims priority, application United Kingdom, Dec. 15, 1976, 52434/76
Int. Cl.³ B01N *15/08*
U.S. Cl. 210—635 **13 Claims**



1. A chromatography process for the selective separation of a chemical component from a fluid substance which comprises contacting the fluid substance with a composite material having affinity chromatography properties, said composite material comprising an inorganic porous rigid support material having within the pores thereof a deformable gel to which is coupled an affinity chromatography ligand being capable of selectively sorbing the chemical component from the fluid substance, the outside surface of said support being substantially free of said deformable gel.

4,385,992

WATER SOFTENER CONTROL

Arlen E. Clauer, Brookfield, and Jeffrey G. Franks, Milwaukee, both of Wis., assignors to Autotrol Corporation, Milwaukee, Wis.

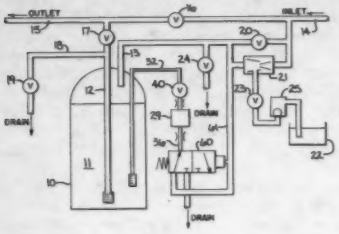
Filed Jun. 29, 1981, Ser. No. 278,184
Int. Cl.³ B01J *49/00*
U.S. Cl. 210—662 **11 Claims**

9. In a method of regenerating a water softener which includes the steps of

periodically withdrawing water which has passed through a major portion of the bed of softening ion exchange resin and directing such water to a separate bed of ion exchange resin which will change volume as it becomes exhausted, and

sensing the volume of said separate bed and initiating regeneration cycle when the volume has changed by a predetermined amount, said regeneration cycle including supplying a regeneration fluid to the softening bed from a source the improvement wherein

regeneration fluid is supplied directly from said source to said separate bed at the beginning of the step of supplying regeneration fluid to said softening bed.

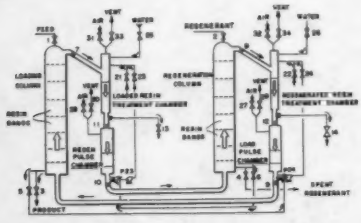


4,385,993

METHOD AND APPARATUS FOR FOLDED MOVING BED ION EXCHANGE SYSTEM

Harold N. Hedrick, Brandon, and Solon G. Whitney, Bartow, both of Fla., assignors to American Petro Mart, Inc., Bartow, Fla.

Filed Jun. 22, 1981, Ser. No. 275,658
Int. Cl.³ B01D *15/04*
U.S. Cl. 210—675 **11 Claims**



1. An ion exchange apparatus system utilizing moving folded beds for loading and stripping of the ion exchange resin, including at least a resin-containing loading column, a resin-containing stripping column, first resin transfer means for moving increments of liquid-containing loaded resin in a first circuit from the upper portion of the loading column to the lower portion of the stripping column, second resin transfer means for moving increments of liquid-containing stripped resin in a second circuit from the upper portion of the stripping column to the lower portion of the loading column, and liquid inlet and outlet means, respectively, for introducing liquids into upper portions of said columns and removing liquids from the lower portions thereof, wherein the improvement comprises providing separate treatment and pulse chambers in said first and second transfer circuits, including at least one treatment chamber before each of the pulse chambers, the last of the treatment chambers in each circuit receiving liquid-containing resin and being selectively isolatable from the pulse chamber therein and connectable thereto through resin valve means provided therebetween, said last treatment chambers in each of said circuits including gas and liquid inlet and outlet means for use in removing liquid from the resin, said outlet means being arranged to discharge the removed liquid while the last of the treatment chambers in the circuit is isolated from the pulse chamber therein, the pulse chambers receiving the treated resin having means for transfering pulsed compacted increments of treated resin, respectively, to said stripping and loading columns, said loading and stripping columns being full of resin from the bottom to the top thereof, and said first and second resin transfer means being arranged so that the introduction of each pulsed compacted resin increment to the bottom of the loading or stripping column causes the explusion of a resin increment of corresponding compacted volume from the top thereof for transfer, respectively, in said first and second circuits.

4,385,994

ADSORPTIVE USE OF CRYSTALLINE METALLOPHOSPHATE COMPOSITIONS

Stephen T. Wilson, Shrub Oak; Brent M. Lok, New York, and Edith M. Flanigen, White Plains, all of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 166,333, Jul. 7, 1980, Pat. No. 4,310,440. This application Oct. 26, 1981, Ser. No. 315,055
Int. Cl.³ B01D *15/00*
U.S. Cl. 210—689 **2 Claims**

1. Process for separating polar molecular species having effective molecular diameters of less than about 10 Angstroms from mixture with less polar species by contacting said mixture with at least one crystalline aluminophosphate, said aluminophosphate being at least partially dehydrated, having a pore diameter large enough to adsorb the more polar molecular species, and having a framework structure whose chemical composition expressed in terms of mole ratios of oxides is:

$$Al_2O_3{:}1.0{\pm}0.2\ P_2O_5$$

said framework structure being microporous in which the pores are uniform and have nominal diameters within the range of about 3 to about 10 Angstroms, an intracrystalline adsorption capacity for water at 4.6 torr and 24° C. of at least 3.5 weight percent, the adsorption and desorption of water being completely reversible while retaining the same essential framework topology in both the hydrated and dehydrated state.

2. Process according to claim 1 wherein the more polar molecular species is water.

4,385,995

METHOD OF RECOVERING AND USING FINE COAL

Michael A. Dondelewski, 1358 Gertrude Dr., Columbus, Ohio 43227

Continuation of Ser. No. 23,744, Mar. 26, 1979, abandoned. This application Aug. 15, 1980, Ser. No. 178,620
Int. Cl.³ C02F *1/54*
U.S. Cl. 210—705 **9 Claims**

1. The method of recovering coal fines comprising the steps for:

a. slurrying the fines in a mixture of water and fixed oil in excess of the amount of fixed oil the fines will gather on their surfaces,

b. agitating the mixture to form a froth containing the fines,

c. skimming the froth containing coal fines from the liquid over which it floats,

d. separating excess water and fixed oil from the froth to form a filter cake,

e. pelletizing said filter cake, and

f. heating and drying said pellets.

4,385,996

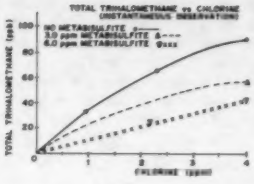
CONTROL OF TRIHALOMETHANES IN WATER TREATMENT

Timothy W. McCarthy, Walnut Creek, Calif., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Nov. 3, 1981, Ser. No. 317,802

Int. Cl.³ C02F 1/58

U.S. Cl. 210—719 **9 Claims**



1. A method of treating water to disinfect the water and reduce the formation of trihalomethanes which comprises adding to the water from about 0.1 to about 50 parts per million of sulfite ion supplied by a compound selected from the group consisting of sodium metabisulfite and sulfur dioxide to reduce the chlorine demand and thereafter adding to the water sufficient chlorine to react with any biological materials present and maintain a residual amount of chlorine sufficient to disinfect the water and make the water potable, whereby the formation of trihalomethanes present in the water amounts to less than 100 parts per billion.

4,385,997

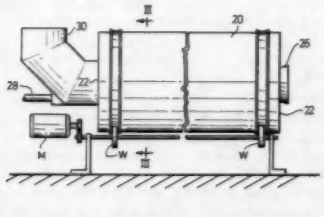
METHOD AND APPARATUS FOR PRECONDITIONING LAMINATED PAPER FOR RECYCLING

Milos Stradal, St. Foy, Canada, assignor to Reed Ltd., Toronto, Canada

Filed Jan. 21, 1980, Ser. No. 113,547

Int. Cl.³ D21C 5/02

U.S. Cl. 210—784 **9 Claims**



1. Process for pre-conditioning corrugate for delamination to separate its corrugate core ply from the liner plies to which it is joined by adhesive bonds, comprising the steps of:

introducing corrugate in shredded form into a tank containing a pool of solvent fluid capable of undermining said adhesive bonds and advancing the corrugate within the tank through said pool from a point of entry to a point of exit therefrom;

shuffling the corrugate while it is in transit between said points of entry and exit to promote penetration of the solvent fluid between said liner plies and access thereof to said adhesive bonds;

timing the transit as aforesaid to allow adequate undermining of said adhesive bonds with minimal absorption of said solvent fluid by the respective plies of said corrugate, and of thereafter,

removing the corrugate from said pool of solvent fluid at said point of exit of said tank prior to any significant size reduction of the plies, draining excess solvent fluid therefrom and transferring it to apparatus for delaminating it while said adhesive bonds are undermined.

4,385,998

REMOVAL OF SUSPENDED SOLIDS FROM WATER

Joseph E. Schiller, and Sanaa E. Khalafalla, both of Minneapolis, Minn., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Aug. 14, 1981, Ser. No. 293,027

Int. Cl.³ B01D 23/10

U.S. Cl. 210—807 **2 Claims**

1. A process for treatment of a feed consisting essentially of water and, suspended therein, a solid material from the group consisting of quartz, clay, phosphate slime solids, solids from iron ore processing, solids from granite quarrying, gold mine water solids, steel mill solids, or mixtures thereof, comprising filtering the feed through a layer of magnesium oxide.

2. The process of claim 1 in which the filtration is accomplished by percolation of the feed through a bed of the magnesium oxide in a column.

4,385,999

SULFONATED GILSONITE DRILLING MUD ADDITIVE

Jack L. McCrary, 207 Broadmoor Blvd., Lafayette, La. 70503

Filed Aug. 10, 1981, Ser. No. 291,161

Int. Cl.³ C09K 7/02

U.S. Cl. 252—8.5 C **9 Claims**

1. A process for making sulfonated gilsonite to be used as an additive in a drilling fluid which comprises:

(a) reacting in a reaction zone water with a mixture of gilsonite having a softening point of at least 300° F., lignite, sodium sulfite and a water soluble base compound at a temperature between 210°–280° F. for a period of time sufficient to achieve sulfonation of said gilsonite, wherein the percent by weight of the components of said mixture introduced into said reaction is:

Gilsonite	55–60%
Lignite	15–25%
Sodium Sulfite	15–20%
Water Soluble Base Compound	5–10%;

and,

(b) removing from the reacted mixture by drying said water remaining.

4,386,000

FABRIC SOFTENING COMPOSITION

John C. Turner, Cramlington; Anthony Dovey, Whitley Bay, and Neil A. MacGilp, Morpeth, all of England, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jul. 1, 1981, Ser. No. 279,367

Claims priority, application United Kingdom, Jan. 7, 1980, 8022104

Int. Cl.³ D06M 13/46, 15/52

U.S. Cl. 252—8.8 **13 Claims**

1. A liquid farbic softening composition in the form of a dispersion in aqueous isotropic medium comprising:

(a) from 8% to 22% of water-insoluble cationic fabric softener, and

(b) a viscosity regulator system comprising:

(i) from 0.5% to 6% of a first regulator component selected from C_{10}–C_{24} non-cyclic hydrocarbons, C_{10}–C_{24} fatty acids or esters thereof with monohydric alcohols containing from 1 to 4 carbon atoms, C_{10}–C_{24} fatty alcohols, and mixtures thereof, and

(ii) from 0.05% to 1.0% of a second regulator component which is a water-soluble cationic polymer having an average molecular weight in the range from 2000 to 250,000 selected from polyethylenimine, the reaction product of polyethylenimine with ethylene oxide, prop-

ylene oxide or both in a weight ratio of greater than 1:4, and the C_1–C_{20} alkyl and benzyl quaternization products of polyethylenimine and of said reaction product of polyethylenimine and mixtures thereof.

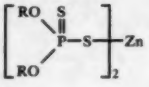
4,386,001

MARINE CRANKCASE LUBRICANT

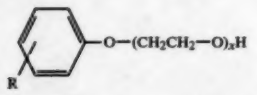
Benjamin H. Zoleski, Beacon; Rodney L. Sung, and William P. Cullen, both of Fishkill, all of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Oct. 27, 1981, Ser. No. 315,571
Int. Cl.³ C10M *1/48*
U.S. Cl. 252—32.7 E **7 Claims**

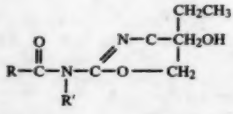
1. A crankcase lubricating oil composition having a Total Base Number in the range from about 3 to 10 comprising a major proportion of a mineral lubricating oil containing from about 1 to 5 weight percent of at least one overbased salt selected from the group consisting of calcium alkylphenolate, sulfurized calcium alkylphenolate and mixtures thereof, from about 0.1 to 1 weight percent of a zinc dithiophosphate represented by the formula:



in which R is a hydrocarbyl radical or a hydroxy substituted hydrocarbyl radical having from 3 to 12 carbon atoms, from about 0.5 to 1 weight percent of an ethoxylated alkylphenol represented by the formula:



wherein R represents an alkyl radical having from 4 to 20 carbon atoms and x has an average value ranging from about 4 to about 30 and, from about 0.2 to 5 weight percent of at least one acyl glycine oxazoline derivative of the formula:



where in R is lauryl, $C_{11}H_{23}$, oleyl or stearyl; R′ is hydrogen or (lower) alkyl.

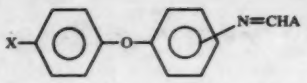
4,386,002

IMINES OF AMINODIPHENYL ESTHERS AS ANTIOXIDANTS AND LUBRICATING OILS AND GREASES CONTAINING SAME

John T. Roberts, Arlington Heights, Ill., assignor to UOP Inc., Des Plaines, Ill.

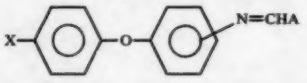
Filed May 12, 1981, Ser. No. 263,378
Int. Cl.³ C10M *1/38*
U.S. Cl. 252—47.5 **19 Claims**

1. A method of inhibiting oxidation in lubricating oils and greases comprising adding thereto an oxidation inhibiting amount of a material with the structure,



where A is selected from the group consisting of unsubstituted and ring-substituted aromatic and heteroaromatic rings, and X is selected from the group consisting of hydrogen, halogen, alkoxy and alkylmercapto wherein the carbonaceous portion contains up to about 18 carbon atoms.

11. A composition comprising a major amount of a lubricating oil or grease and a minor amount from about 0.05% to about 5% by weight of a material with the structure,



where A is selected from the group consisting of unsubstituted and ring-substituted aromatic and heteroaromatic rings, and X is selected from the group consisting of hydrogen, halogen, alkoxy and alkylmercapto wherein the carbonaceous portion contains up to about 18 carbon atoms.

4,386,003

BLOOD SEPARATING COMPOSITION

William R. Fiehler, St. Louis, Mo., assignor to Sherwood Medical Industries Inc., St. Louis, Mo.

Filed Sep. 17, 1981, Ser. No. 303,001
Int. Cl.³ B01D *17/00, 21/26*
U.S. Cl. 252—60 **17 Claims**

16. A method of preparing a fluid collection and partitioning assembly comprising the steps of:

(a) preparing a thixotropic gel by

(1) providing a silicone fluid having a viscosity of between about 1,000 and 100,000 centistokes at 25° C., said silicone fluid comprising a single stock fluid or a blend of at least two blend stock fluids, each said stock fluid or blend stock fluid having a viscosity within about ±15% of the viscosity of said silicone fluid; and

(2) reacting said silicone fluid with a filler material and a thixotropic property-imparting amount of a network former at or below about 120° C. in such proportions as to form a gel having a viscosity between about 200,000 and 450,000 centipoise;

(b) disposing the gel of step (a) in a container having a closed end and an open end;

(c) evacuating said container and closing said open end; and,

(d) exposing said tube and said gel to a sterilizing dose of electron capture-type radiation for a time sufficient to sterilize said gel and said tube.

17. The fluid collection and partitioning assembly prepared by the method of claim **16**.

4,386,004

COMPOSITION FOR TREATING MASONRY MATERIALS

James L. Jenkins, 52 W. Ogden St., Montgomery, Ala. 36105

Filed Jul. 2, 1981, Ser. No. 279,818
Int. Cl.³ C11D *7/08*
U.S. Cl. 252—145 **1 Claim**

1. A composition for treating masonry materials comprising equal volumes of a specific cleaning fluid and a powdered pigment composition to provide a protective coating for application to masonry materials wherein said specific cleaning fluid comprises 2 to 5 parts by volume water and approximately 1 part by volume of a mixture of approximately the following parts by weight:

(a) 1,600 parts water,

(b) 2 to 10 parts of a light-duty liquid detergent composition consisting essentially of: from about 8% to about 35% of an alkyl ether sulfate obtained by sulfating and neutralizing the condensation product of from about 5 to about 12 moles of ethylene oxide and 1 mole of a high molecular weight primary alcohol having from about 10 to about 16 carbon atoms and having the formula

$$R—(OC_2H_4)_r—OSO_3—M$$

wherein R is an alkyl having from about 10 to about 16 carbon atoms; M is a salt-forming cation; and r has an average value of from about 5 to about 12; an alkyl sulfate derived from a primary alcohol having the formula

$$ROSO_3—M$$

wherein R is an alkyl having from about 10 to about 16 carbon atoms; and M is a salt-forming cation; the ratio of said alkyl ether sulfate to said alkyl sulfate being from about 2:1 to about 6:1, from about 2% to about 6% of an alkyl glyceryl ether sulfonate having a straight-chain alkyl of from about 12 to about 14 carbon atoms and wherein the cation of said sulfonate is an alkali metal, ammonium or alkylolamine; from about 2% to about 8% of a trialkylamine oxide having one straight-chain alkyl of from about 12 to about 14 carbon atoms and two short-chain alkyl groups of from 1 to about 2 carbon atoms; and the balance water,

(c) 4 parts methyl salicylate,

(d) 320 parts calcium chloride, and

(e) 1,280 parts of 20% strength muriatic acid, and wherein said powered pigment composition comprises approximately 70% to 95% by weight Portland cement, approximately 5% to 20% by weight lime and approximately 2% to 10% by weight titanium dioxide.

4,386,005

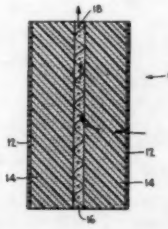
SCALE INHIBITOR FOR REVERSE OSMOSIS WATER PURIFICATION SYSTEM

Anita G. Kapiloff, Treasure Island, and Randolph T. Hatch, Silver Spring, both of Md., assignors to Chemical Sciences, Inc., Beltsville, Md.

Filed Jan. 6, 1981, Ser. No. 222,760

Int. Cl.³ C02F 5/14

U.S. Cl. 252—180 **5 Claims**



1. A composition for inhibiting scale in a reverse osmosis water purification system consisting essentially of from 1 to 0.05 part by weight of polyacrylic acid having a molecular weight of from 1,000 to about 10,000 and from 0.05 to 1 part by weight of phytic acid to thereby provide from 0.01 to 20 ppm of each of said polyacrylic acid and said phytic acid when diluted for use.

4,386,006

ION-EXCHANGE COMPOSITIONS

Donald F. Harrington, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 25, 1968, Ser. No. 700,656

Int. Cl.³ C01B 31/16

U.S. Cl. 252—184 **8 Claims**

1. An ion exchange composition which comprises a solid, water-insoluble, porous substrate having polymerized within the pores thereof a vinyl polymer having ion exchange capacity where the polymer is held within the porous substrate by macromolecular entanglement.

4,386,007

LIQUID CRYSTALLINE NAPHTHALENE DERIVATIVES

Joachim Krause, Dieburg; Michael Römer, Rodgau, and Ludwig Pohl, Darmstadt, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

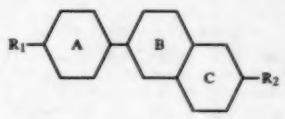
Filed Dec. 5, 1980, Ser. No. 213,517

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1979, 2949080

Int. Cl.³ C09K 3/34; G02F 1/13; C07C 43/20, 13/48, 23/36, 25/18, 69/14, 69/24

U.S. Cl. 252—299.62 **4 Claims**

1. A naphthalene derivative of the formula



wherein ring A is 1,4-phenylene and ring system BC is 3,4-dihydro-2,6-naphthylene or 1,2,3,4-tetrahydro-2,6-naphthylene; and R_1 is alkyl, alkoxy, or alkanoyloxy having up to 8 C atoms in each case, CN, or halogen; and R_2 is attached to the 2 position of ring system BC and is alkyl of up to 8 C atoms.

4,386,008

CORROSION PROTECTION PACKAGE

David R. Sexsmith, Teaneck, and Bruce L. Libutti, Dover, both of N.J., assignors to Drew Chemical Corporation, Boonton, N.J.

Filed Jul. 29, 1981, Ser. No. 288,153

Int. Cl.³ C09K 3/00

U.S. Cl. 252—389 R **14 Claims**

9. A process for inhibiting corrosion in an aqueous system, comprising:

adding to an aqueous system at least one water disintegratable package containing at least one solid water soluble salt of hydrazine within said at least one package, said at least one package being added to the aqueous system to provide a corrosion inhibiting amount of the hydrazine salt dissolved in the aqueous system.

4,386,009

METHOD AND SYSTEM FOR ETHANOL PRODUCTION

Harold M. Feder, and Michael J. Chen, both of Darien, Ill., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Continuation-in-part of Ser. No. 151,996, May 21, 1980, Pat. No. 4,301,312. This application Sep. 24, 1981, Ser. No. 305,295

Int. Cl.³ B01J 31/20

U.S. Cl. 252—428 **16 Claims**

1. A homogeneous catalytic system in organic solution for the conversion of methanol to ethanol in accordance with the reaction $MeOH + 2CO + H_2 \rightarrow EtOH + CO_2$ comprising:

organic solvent including methanol;

a tertiary amine in the organic solution; and

a combination of transition metal carbonyl species in the organic solution selected from the group consisting of iron carbonyl species with manganese carbonyl species and iron carbonyl species with rhodium carbonyl species.

4,386,010

TREATED ATTAPULGITE CLAY COMPOSITION

Steven J. Hildebrandt, Kendall Park, N.J., assignor to Engelhard Corporation, Edison, N.J.

Continuation of Ser. No. 183,619, Sep. 2, 1980, abandoned. This application Dec. 2, 1981, Ser. No. 326,720

Int. Cl.³ B01J *31/02*

U.S. Cl. 252—428 **3 Claims**

1. A solid particulate composition comprising particles of attapulgite clay calcined to a volatile matter content of 10 percent by weight or less at a temperature in the range of about 200°–550° C. and having a surface area of about 80–140 $m.^2/g.$ as determined by the standard B.E.T. method using nitrogen, a pore volume of about 0.5–0.8 cc./g., and a cationic exchange capacity in the range of 10–40 meq./100 g., said calcined attapulgite clay having been treated with at least one organic substituted quaternary cationic surfactant selected from the group consisting of ammonium, phosphonium and mixtures thereof having at least one organic group of at least four carbon atoms in the amount within the range of about 5–50 meq./100 g. of clay.

4,386,011

OLEFIN POLYMERIZATION WITH CATALYSTS CONTAINING FOOD GRADE ADDITIVES

Lawrence M. Fodor, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 28, 1981, Ser. No. 306,444

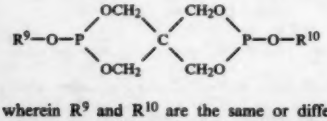
Int. Cl.³ C08F *4/64*

U.S. Cl. 252—429 B **27 Claims**

1. A process to make a transition metal catalyst component useful in the polymerization of olefins comprising mixing an initial transition metal catalyst component with at least one adjuvant selected from the group consisting of esters of thiodialkanoic acids and mixtures thereof.

10. A process to make a transition metal catalyst component useful in the polymerization of olefins comprising mixing an initial transition metal catalyst component with at least one adjuvant selected from the group consisting of

the esters of phosphorous acid having the formula

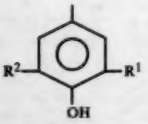


wherein R^9 and R^{10} are the same or different groups selected from alkyl, cycloalkyl, aryl, the halo-substituted derivatives thereof and combinations thereof, containing from 1 to 20 carbon atoms,

the esters of the phosphoric acid having the formula

$(TO)_3PO$

wherein T is a group having the formula



wherein R^1 and R^2 are the same or different alkyl radicals having 1 to 8 carbon atoms,

and mixtures thereof.

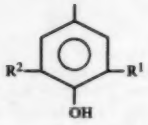
19. A process to make a catalyst component useful in the polymerization of olefins comprising mixing an initial transition metal catalyst component, said transition metal being selected from the group consisting of titanium, vanadium and chromium, with at least one adjuvant selected from the group of hindered phenolic compounds being characterized as

(a) T-substituted alkyl esters of phosphonic and propionic acids and

(b) compounds having the formula

$R^3—T$

wherein R^3 is an alkyl radical of 1–8 carbon atoms and T is a hindered phenol group having the formula



wherein R^1 and R^2 are the same or different alkyl radicals having 1 to 8 carbon atoms, and mixtures thereof.

4,386,012

ZEOLITE MOLECULAR SIEVE ADSORBENT FOR USE IN AN AQUEOUS SYSTEM

Santi Kulprathipanja, Hoffman Estates, and Richard W. Neuzil, Downers Grove, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 146,533, May 2, 1980, Pat. No. 4,319,928. This application Feb. 1, 1982, Ser. No. 344,707

Int. Cl.³ B01J *20/18, 20/22*

U.S. Cl. 252—430 **15 Claims**

1. An adsorbent comprising a clay bound crystalline aluminosilicate zeolite dispersed in an inorganic matrix suitable for use in a process for the separation of a component from a feed mixture comprising an aqueous solution of a mixture of components by contacting said solution with said adsorbent which adsorbent has been used at least once for the separation of a component from an aqueous feed mixture and which possesses a silicon constituent which tends to dissolve in said solution resulting in the undesirable disintegration of said used adsorbent, said used adsorbent being coated with a water permeable organic polymer which coating substantially reduces the extent of dissolution of said silicon constituent and the extent of said disintegration of said used adsorbent when contacted with said aqueous solution.

2. The adsorbent of claim **1** further charactized in that said water soluble organic polymer comprises a cellulose ester, cellulose nitrate or cellulose acetate butyrate.

7. A method for the manufacture of an adsorbent comprising a clay bound crystalline aluminosilicate zeolite dispersed in an inorganic matrix precursor coated with a water permeable organic polymer, which precursor has been used at least once for the separation of a component from an aqueous feed mixture, said adsorbent being suitable for use in a process for the separation of a component from a feed mixture comprising an aqueous solution of a mixture of components, which method comprises:

(a) dissolving said polymer in a liquid organic solvent to form a polymer solution;

(b) adding the uncoated precursor of said adsorbent to said polymer solution to form an adsorbent slurry; and

(c) removing said solvent from said adsorbent slurry to obtain said adsorbent.

4,386,013

HYDROFORMYLATION PROCESS UTILIZING NOVEL CATALYST

Kenneth P. Callahan, Costa Mesa; Peter M. DiGiacomo, Mission Viejo, and Martin B. Dines, Laguna Beach, all of Calif., assignors to Occidental Research Corporation, Irvine, Calif.

Filed Aug. 24, 1981, Ser. No. 295,340
Int. Cl.³ B01J 31/24
U.S. Cl. 252—431 P 13 Claims

1. A hydroformylation catalyst comprising a composite of rhodium and a support selected from the group consisting of compounds represented by the general formula

$$M(O_3ZO_xR)_n$$

wherein M comprises a tetravalent metal, Z comprises an atom selected from the group consisting of members of Group V of the Periodic Table of the Elements having an atomic weight of at least 30, R is selected from the group consisting of organo acyclic, alicyclic, heterocyclic, heterocyclic, aromatic groups and mixtures thereof, provided that at least some of such organo radicals comprise a moiety selected from the group consisting of phosphine radicals, x is 0 or 1, and n is 2, provided that n is 1 when R is terminated with a tri- or tetra-oxy pentavalent atom.

4,386,014

CATALYST OF SUPPORTED SILVER AND LEAD FOR THE PRODUCTION OF FORMALDEHYDE

H. Robert Gerberich, and Eldred T. Smith, both of Corpus Christi, Tex., assignors to Celanese Corporation, New York, N.Y.

Filed Jul. 27, 1981, Ser. No. 287,385
Int. Cl.³ B01J 21/04, 23/14, 23/50, 27/22
U.S. Cl. 252—443 12 Claims

1. A catalyst comprising silver and lead on a support having a surface area below about 5 m^2/g, the weight ratio of lead to silver ranging from about 0.005 to about 0.15.

4,386,015

HYDROCARBON CRACKING ZEOLITIC CATALYST

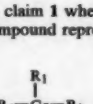
Brent J. Bertus, and Dwight L. McKay, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 139,483, Apr. 11, 1980, Pat. No. 4,334,979. This application Jun. 22, 1981, Ser. No. 276,402
Int. Cl.³ B01J 29/06
U.S. Cl. 252—455 Z 31 Claims

1. A cracking catalyst composition comprising a zeolitic modified hydrocarbon cracking catalyst having deposited thereon at least one of nickel, vanadium and iron and at least one treating agent selected from the group consisting of germanium and a germanium compound, wherein the weight ratio of germanium to vanadium equivalents is in the range of from about 1:6000 to about 5:1.

3. A composition as in claim 1 wherein the concentration of germanium is between about 0.0001 and about 4 parts by weight germanium per 100 parts by weight of said composition.

6. A composition as in claim 1 wherein said treating agent comprises at least one compound represented by the formula



wherein R_1, R_2, R_3 and R_4 are independently selected from the group consisting of hydrogen, halogen, hydrocarbyl and oxyhydrocarbyl.

9. A composition as in claim 3 wherein said treating agent is selected from the group consisting of a germanium salt of a hydrocarbylphosphoric acid and a germanium salt of a hydrocarbylthiophosphoric acid.

4,386,016

PREPARATION OF POROUS, PURE SILICA DIOXIDE AND OF CHROMIUM-OXIDE-ON-SILICA DIOXIDE CATALYSTS

Joseph J. F. Scholten, Sittard, and Lambertus J. M. A. vande Leemput, Echt, both of Netherlands, assignors to Stamicarbon, B.V., Geleen, Netherlands

Filed Oct. 26, 1981, Ser. No. 315,218
Claims priority, application Netherlands, Oct. 24, 1980, 8005856
Int. Cl.³ B01J 29/00; C10B 33/12
U.S. Cl. 252—458 10 Claims

1. A process for the preparation of porous silicon dioxide having the combination of high surface area and high pore volume consisting essentially in the combination of steps of converting a silicon dioxide prepared by flame hydrolysis into an aqueous gel, using at least the same quantity by weight of water, mixing therewith at least 15 vol. % of a C_1 to C_5 alkanol, calculated in relation to the volume of the water in the gel, aging said gel for at least a period of hours, and thereafter spray-drying the resulting aqueous/alcohol silica gel.

10. A process for the preparation of a chromium oxide catalyst impregnated on a silicon dioxide carrier wherein said silicon dioxide carrier has been prepared according to either one of claims 1 or 2.

4,386,017

PREPARATION OF IMPROVED CATALYST COMPOSITION

Tadasi Nakamura; Minoru Osugi; Yoriko Obata, and Shuji Ebata, all of Niigata, Japan, assignors to Mitsubishi Gas Chemical Company, Tokyo, Japan

Filed Nov. 10, 1980, Ser. No. 205,594
Claims priority, application Japan, Nov. 12, 1979, 54-146325
Int. Cl.³ B01J 23/08, 21/02, 27/24
U.S. Cl. 252—463 17 Claims

1. A process for preparing a catalyst composition comprising copper oxide, zinc oxide and aluminum oxide as essential ingredients which comprises,

(a) a step of precipitating, from an aqueous solution of water-soluble copper salt, the copper component, using an alkaline substance selected from alkali carbonates and alkali bicarbonates as a precipitant;

(b) a step of blowing carbon dioxide gas into an aqueous dispersion of a zinc compound selected from zinc oxide and zinc hydroxide to convert the zinc compound to basic zinc carbonate; and

(c) a step of calcining a mixture of the solid products obtained in steps (a) and (b) in the presence of an alumina precursor compound.

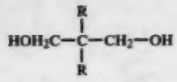
4,386,018

HYDROGENATION CATALYSTS FOR THE PREPARATION OF PROPANEDIOLS

Franz Merger, Frankenthal; Ernest Miesen; Franz J. Broecker, both of Ludwigshafen; Wolfgang Schroeder, Bad Durkheim; Karl Baer, Weinheim; Juergen Paetsch, Wachenheim, and Leopold Hupfer, Friedelsheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

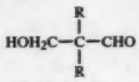
Filed Jul. 6, 1981, Ser. No. 280,776
Claims priority, application Fed. Rep. of Germany, Jul. 23, 1980, 3027890
Int. Cl.³ B01J 21/04, 23/02, 23/04, 23/72
U.S. Cl. 252—465 8 Claims

1. A hydrogenation catalyst for the preparation of a propanediol of the formula



I

where the individual radicals R can be identical or different and each is an aliphatic, araliphatic or aromatic radical, or the two radicals R together with the adjacent carbon atom are members of an alicyclic ring, by hydrogenating a hydroxypropionaldehyde of the formula:



II

where R has the above meanings, in the presence of a copper-containing catalyst, said catalyst being used under a pressure of at most 300 bar and at a hydrogenation temperature of from 50° to 200° C., having a specific surface area of from 50 to 150 square meters per gram, solely or partially containing crystals having a spinel structure and copper in the form of copper oxide, and having been obtained by the steps which comprise:

precipitating copper and aluminum in a ratio of from 0.25 to 3 atoms of copper per atom of aluminum from a solution of their compounds in the presence of a carbonate at a pH of from 4.5 to 9; and

(a) calcining the resulting precipitate at from 300° to 800° C. for from 0.2 to 2 hours, or

(b) calcining the resulting precipitate at from 300° to 800° C. for from 0.1 to 2 hours, then molding it and heating it once again for from 0.1 to 2 hours at from 200° to 350° C.

4,386,019

METHOD OF MAKING ELECTRODES FOR ELECTROCHEMICAL CELL

Thomas D. Kaun, New Lenox, and Dennis J. Kilsdonk, Joliet, both of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 29, 1981, Ser. No. 287,856

Int. Cl.³ H01B *1/04*

U.S. Cl. 252—503 **18 Claims**

1. A method of making an electrode for an electrochemical cell comprising, providing particulate electrode-active material, providing a liquid organic carrier chemically inert with respect to the electrode-active material, mixing the liquid carrier and the particulate electrode-active material to form an extrudable slurry, said liquid carrier being present in an amount of from about 10 to about 50 percent by volume of the slurry, and evaporating the carrier from the slurry leaving the electrode-active material.

9. A method of making a negative electrode for an electrochemical cell comprising providing a particulate mixture of a lithium-aluminum alloy and an electrolyte and a material selected from graphitized carbon, an aluminum-iron alloy or mixtures thereof, said lithium-aluminum alloy being present in the range of from about 45 to about 80 percent by volume of the negative electrode, said electrolyte being present in an amount not less than about 10 percent by volume of the negative electrode, said graphitized carbon being present in the range of from about 1 to about 10 percent by volume of the negative electrode, said aluminum-iron alloy being present in the range of from about 3 to about 10 percent by volume of the negative electrode, providing a liquid organic carrier chemically inert with respect to said lithium-aluminum alloy, mixing the liquid carrier and the particulate mixture to form an extrudable slurry, said liquid carrier being present in an amount of from about 10 to about 50 percent by volume of the slurry, forming said slurry into a predetermined shape, and evaporating the liquid carrier from the slurry thereby to provide a negative electrode having a predetermined shape for an electrochemical cell.

4,386,020

PROCESS FOR THE PRODUCTION OF THERMODYNAMICALLY STABLE SOLID ION CONDUCTOR MATERIALS

Peter Hartwig, Weinheim; Werner Weppner, Stuttgart, and Winfried Wichelhaus, Ingelheim am Rhein, all of Fed. Rep. of Germany, assignors to Max Planck Gesellschaft zur Förderung der Wissenschaften E.V., Göttingen, Fed. Rep. of Germany

Filed May 1, 1980, Ser. No. 145,638

Claims priority, application Fed. Rep. of Germany, May 10, 1979, 2918940

Int. Cl.³ H01B *1/06*

U.S. Cl. 252—518 **4 Claims**

1. Ion conductor material based on lithium or sodium compounds of the formula

$$A_{3u+2v+w}X_uY_vZ_w$$

wherein

A is lithium or sodium

X is nitrogen, phosphorus or arsenic

Y is nitrogen, sulphur, tellurium or selenium

Z is hydrogen or fluorine, chlorine, bromine and iodine; and

u, v, and w each represent a number of from 0 to 1 inclusive, with the proviso that only one of u, v and w can be 0.

4,386,021

VOLTAGE-DEPENDENT RESISTOR AND METHOD OF MAKING THE SAME

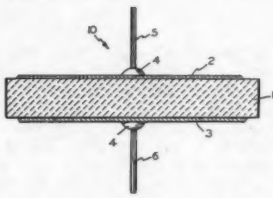
Kazuo Eda, Hirakata; Yasuharu Kikuchi, Moriguchi; Osamu Makino, Katano, and Matsuoka Michio, Ibaraki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Nov. 25, 1980, Ser. No. 210,394

Claims priority, application Japan, Nov. 27, 1979, 54-154085; Nov. 27, 1979, 54-154086; Nov. 27, 1979, 54-154087

Int. Cl.³ H01B *1/06*

U.S. Cl. 252—519 **6 Claims**



1. In a process for making a bulk-type voltage-dependent resistor consisting essentially of:

(a) admixing, as the main constituent, zinc oxide (ZnO) and, as additives, 0.1 to 3.0 mole percent of bismuth oxide (Bi_2O_3), 0.1 to 3.0 mole percent of cobalt oxide (Co_2O_3), 0.1 to 3.0 mole percent of manganese oxide (MnO_2), 0.1 to 3.0 mole percent of antimony oxide (Sb_2O_3), 0.05 to 1.5 mole percent of chromium oxide (Cr_2O_3), 0.005 to 0.3 mole percent of boron oxide (B_2O_3), at least one member selected from the group consisting of 0.0005 to 0.025 mole percent of aluminum oxide (Al_2O_3) and 0.0005 to 0.025 mole percent of gallium oxide (Ga_2O_3), and at least one member selected from the group consisting of 0.1 to 3.0 mole percent of nickel oxide (NiO) and 0.1 to 10.0 mole percent of silicon oxide (SiO_2), to form a mixture consisting essentially of said zinc oxide and said additives;

(b) pressing said mixture into a resistor body;

(c) sintering said resistor body; and,

(d) applying electrodes to the opposite surfaces of the sintered body,

the improvement comprising the step of, prior to pressing, admixing the entire amount of boron oxide (B_2O_3) in the form of borosilicate glass, which is composed of 5 to 30 weight percent of boron oxide (B_2O_3) and 70 to 95 weight percent of silicon oxide (SiO_2) with the other additives and zinc oxide.

4,386,022

VOLTAGE NON-LINEAR RESISTANCE CERAMICS

Ikuo Nagasawa; Kazuo Mukae; Koichi Tsuda; Takashi Ishii, and Toyoshige Sakaguchi, all of Kawasaki, Japan, assignors to Fuji Electric Co. Ltd., Kanagawa, Japan

PCT No. PCT/JP79/00152, § 371 Date Feb. 12, 1980, § 102(e) Date Feb. 12, 1980, PCT Pub. No. WO80/00114, PCT Pub. Date Jan. 24, 1980

PCT Filed Jun. 14, 1979, Ser. No. 191,337

Claims priority, application Japan, Jun. 14, 1978, 53-71827

Int. Cl.³ H01B *1/06*

U.S. Cl. 252—521 **2 Claims**

1. A voltage non-linear resistance ceramic product comprising the mixture of (a) zinc oxide, as the major component, (b) a first accessory component consisting of each of praseodymium, cobalt, potassium and chromium, either in elemental or compound form and (c) at least one second accessory component selected from the group consisting of magnesium and calcium, either in elemental or compound form, the respective amounts of said accessory components when calculated on the elemental basis being 0.2 to 5.0 atom % for praseodymium; 0.5 to 5.0 atom % for cobalt; 0.1 to 0.5 atom % for potassium; 0.05 to 0.5 atom % for chromium, provided that the amount of chromium does not exceed the amount of potassium in said mixture; and, 0.01 to 2.0 atom % for each said magnesium and calcium; said mixture being calcined at a temperature of 1200° to 1400° C. in an oxidizing atmosphere.

4,386,023

SUBSTITUTED TRICYCLODECANE DERIVATIVES, PROCESSES FOR PRODUCING SAME AND ORGANOLEPTIC USES THEREOF

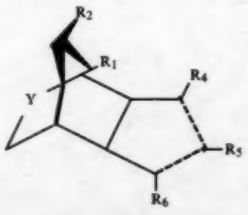
Mark A. Sprecker, Sea Bright, and John B. Hall, Rumson, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation of Ser. No. 220,621, Dec. 29, 1980, abandoned, which is a division of Ser. No. 144,898, Apr. 29, 1980, Pat. No. 4,275,251. This application Dec. 29, 1981, Ser. No. 335,564

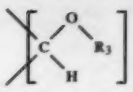
Int. Cl.³ A61K *7/00*

U.S. Cl. 252—522 R **1 Claim**

1. A process for augmenting or enhancing the aroma of a perfume composition or cologne comprising the step of adding to a perfume base or a cologne base an aroma augmenting or enhancing quantity of a composition comprising a major proportion of at least one compound defined according to the structure:

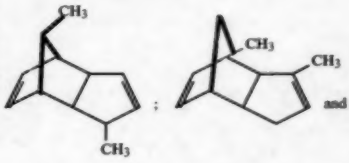


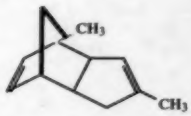
wherein Y is the moiety having the structure:



wherein one of the dashed lines represents a carbon-carbon single bond and the other of the dashed lines represents a carbon-carbon double bond; wherein R_1 and R_2 represent hydrogen or methyl with the proviso that one of R_1 or R_2 is hydrogen and the other of R_1 and R_2 is methyl; wherein R_4, R_5 and R_6 represent hydrogen or methyl with the proviso that one of R_4, R_5 and R_6 is methyl and the other two of R_4, R_5 and R_6 is hydrogen; and wherein R_3 is hydrogen; produced by the process comprising the step of reacting in the presence of a protonic acid catalyst or a Lewis acid catalyst at least one methyl cyclopentadiene isomer having a structure selected from the group consisting of:

or at least one precursor thereof having a structure selected from the group consisting of:





with at least one C_1–C_2 alkanoic acid or at least one C_1–C_2 alkanoic acid anhydride at a temperature in the range of from about 0° C. up to about 50° C. with the concentration of acid catalyst in the reaction mass varying from 0.01% up to 1 mole % based on the weight of reaction mass thereby forming a mixture of esters and then hydrolyzing the resulting esters using from 10 up to 50% by weight of a strong alkali metal hydroxide at a hydrolysis temperature of from about 40° C. up to reflux.

4,386,024

GRANULATE OF ALKALI METAL ALUMINUM SILICATE AND PENTASODIUM TRIPOLYPHOSPHATE, AND PROCESS FOR MAKING IT

Alexander Maurer; Renate Adrian; Horst-Dieter Wasel-Nielen; Günter Sorbe, all of Hürth, and Joachim Kandler, Erftstadt, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 15, 1982, Ser. No. 358,388

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1981, 3111236

Int. Cl.³ B01J *39/14*; C02F *1/42*; C11D *3/12, 7/16*

U.S. Cl. 252—523 **9 Claims**

1. A granulate with a particle size essentially of about 0.2 to 2 mm, comprising:

(a) about 2 to 95 weight % of a partially or completely hydrated pentasodium tripolyphosphate,

(b) about 0.03 to 3 weight % of an ammonium polyphosphate of the general formula (I)

$$H_{(n-m)+2}(NH_4)_mP_nO_{3n+1} \quad (I)$$

in which n stands for an integral average value of 100 to 1000, m stands for a whole number of up to n+2 and m/n stands for a value of about 1, the balance

(c) being in the form of a water-insoluble aluminum silicate ion exchanging material of the general formula (II)

$$(cat_{2/n}O)_x.Me_2O_3.(SiO_2)_y.zH_2O \quad (II)$$

in which cat is a calcium-exchangeable cation with the valency n, x is a number of 0.7 to 1.5, Me stands for boron or aluminum, y is a number of 0.8 to 6 and z is a number of 1.8 to 13.5.

5. A process for making a granulate as claimed in claim **1**, which comprises: spraying, with vigorous agitation, a fine mist of an aqueous 0.5 to 20 weight % solution of an ammonium polyphosphate of general formula (I) on to an intimate pulverulent blend of about 1 to 99 weight % of sodium tripolyphosphate being anhydrous or containing at most 5 weight % of water, and about 99 to 1 weight % of a pulverulent alumosilicate ion exchanging material being anhydrous or having chemically combined water contained in it and corresponding to the following general formula $(cat_{2/n}O)_x.Me_2O_3.(SiO_2)_y$, in which cat, Me, x and y have the meanings given, and granulating the blend with partial or complete hydration of the pentasodium tripolyphosphate and alumosilicate ion exchanging material.

4,386,025

METHOD OF PREPARING ANTITHROMBIN

Robert E. Jordan, Concord, Calif., assignor to Cutter Laboratories, Inc., Berkeley, Calif.

Filed Sep. 30, 1980, Ser. No. 192,286

Int. Cl.[3] **C07G** *7/00*

U.S. Cl. 260—112 B **1 Claim**

1. A method of preparing antithrombin free of heparin, which comprises

(a) contacting antithrombin containing heparin with a lectin-containing, water-insoluble matrix to reversibly immobilize the antithrombin and heparin on the matrix,

(b) contacting the matrix with an aqueous salt solution having an ionic strength sufficient to remove the heparin from the matrix without removing the antithrombin therefrom, and

(c) contacting the matrix with an aqueous carbohydrate solution having a concentration sufficient to remove only antithrombin from the matrix.

4,386,026

CELL-SPECIFIC GLYCOPEPTIDE LIGANDS

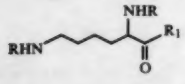
Mitree M. Ponpipom, Branchberg; Robert L. Bugianesi, Colonia; James C. Robbins, Monmouth Junction, and Tsung-Ying Shen, Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Apr. 20, 1981, Ser. No. 255,416

Int. Cl.[3] **C07C** *103/52;* **C08B** *37/00;* **C07H** *11/00*

U.S. Cl. 260—112.5 R **8 Claims**

1. A glycopeptide selected from compounds of the formula:



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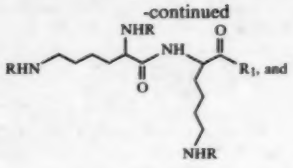
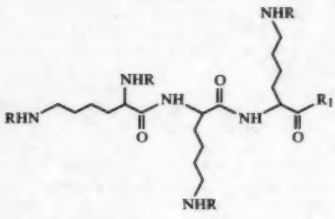
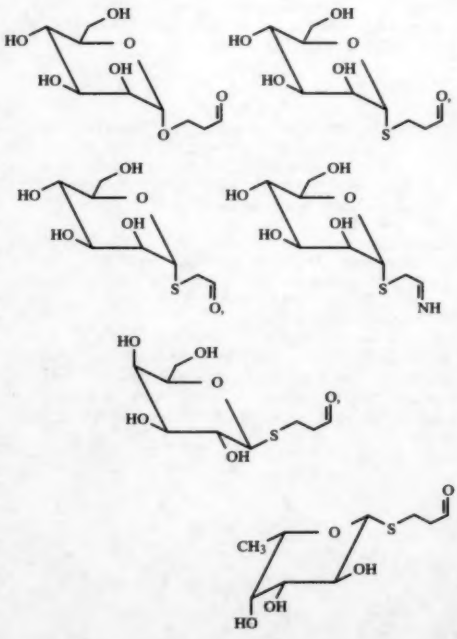




wherein R is a saccharide compound selected from the group consisting of



and R_1 is selected from the group consisting of hydroxyl and NHR_2 wherein R_2 is 6-aminohexyl and acid addition salts thereof.

4,386,027

FLAME-RETARDED THERMOPLASTIC POLYESTER COMPOSITIONS HAVING IMPROVED ARC RESISTANCE AND PROCESS FOR PREPARING SAME

Stuart C. Cohen, Evansville, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed Dec. 30, 1977, Ser. No. 866,009
Int. Cl.[2] C08K 3/34, 9/06
U.S. Cl. 523—210 13 Claims

1. A process for improving the electrical arc resistance of a thermoplastic composition, said process comprising admixing a particulate material selected from the group consisting of mica and surface treated clay with a high molecular weight linear polyester resin and a flame-retarding amount of a flame-retardant, thereby increasing the arc resistance of the composition.

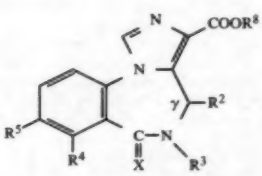
4,386,028

IMIDAZO[1,5A][1,4]BENZODIAZEPINES

Walter Hunkeler, Magden, and Emilio Kyburz, Reinach, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 345,852, Feb. 4, 1982, Pat. No. 4,352,815. This application Jul. 30, 1982, Ser. No. 403,947
Claims priority, application Switzerland, Feb. 27, 1981, 1338/81
Int. Cl.[3] C07D 487/04
U.S. Cl. 260—239.3 P 4 Claims

1. A compound of the formula



VII

wherein one of R^4 and R^5 is hydrogen and the other is nitro or cyano, and either R^2 is hydrogen and R^3 is hydrogen or lower alkyl or R^2 and R^3 together are dimethylene, trimethylene or propenylene and the carbon atom denoted as γ has the (S)- or (R,S)-configuration, X is an oxygen or sulphur atom and R^8 is lower alkyl other than methyl, ethyl or isopropyl.

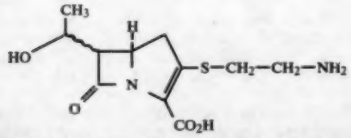
4,386,029

PROCESS FOR THE PREPARATION OF ANTIBIOTICS

David F. Corbett, Reigate, England, assignor to Beecham Group Limited, England

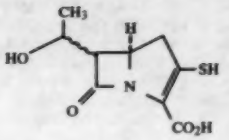
Continuation-in-part of Ser. No. 177,272, Aug. 11, 1980. This application Oct. 24, 1980, Ser. No. 200,428
Claims priority, application United Kingdom, Oct. 29, 1979, 7937456; Apr. 17, 1980, 80012724
Int. Cl.[3] C07D 487/04
U.S. Cl. 260—245.2 T 10 Claims

1. A process for the preparation of a compound of the formula (I):



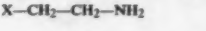
(I)

in which the hydroxyethyl moiety has the S-configuration at C-8, which process comprises the reaction of a chemically or biologically cleavable ester of a compound of the formula (II):



(II)

or thiolate of said ester, with a chemically or biologically cleavable ester of a compound of the formula (III):



(III)

wherein X is chlorine, bromine, iodine, CH_3SO_2O or p-$CH_3C_6H_4SO_2O$, and thereafter cleaving the cleavable ester by chemical or biological means.

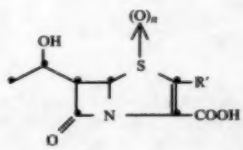
4,386,030

PROCESS FOR PREPARING 6-(1'-HYDROXYETHYL)-2-SUBSTITUTED-PEN-2-EM-3-CARBOXYLIC ACID

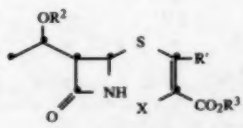
Burton G. Christensen, Metuchen, and Frank P. DiNinno, Old Bridge, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 108,885, Dec. 31, 1979, Pat. No. 4,301,074, which is a division of Ser. No. 948,711, Oct. 10, 1978, Pat. No. 4,260,618, which is a continuation-in-part of Ser. No. 852,275, Nov. 17, 1977, abandoned. This application Nov. 12, 1981, Ser. No. 320,792
The portion of the term of this patent subsequent to Mar. 10, 1998, has been disclaimed.
Int. Cl.[3] C07D 499/04
U.S. Cl. 260—245.2 R 1 Claim

1. A process for preparing a compound having the structure:



wherein: R' is hydrogen, —R, —OR, —SR, —NR_2; wherein R is substituted and unsubstituted: alkyl, having 1–6 carbon atoms, phenyl, and phenylalkyl, having 7–12 carbon atoms; wherein the chain or nuclear substituent on R is selected from amino, mono-, di- and trialkylamino (each alkyl having 1–6 carbon atoms), hydroxyl, alkyloxyl, having 1–6 carbon atoms, mercapto, alkylthio, having 1–3 carbon atoms, phenylthio, sulfamoyl, amidino, guanidino, nitro, chloro, bromo, fluoro, cyano, and carboxyl; n is 0 or 1; when n=1, R is not SR; comprising cyclizing:



in the presence of base; wherein R^2 is a readily removable protecting group selected from p-nitrobenzyloxycarbonyl, trichloroethoxycarbonyl, and t-butyldimethylsilyl; and R^3 is a readily removable protecting group selected from p-nitrobenzyl, t-butyl, and trichloroethyl; and X is halo.

4,386,031

N-BENZOYL-ω-ANILINO ALKANE CARBOXYLIC ACIDS AND SALTS AND ESTERS THEREOF

Gerd Hilboll, Cologne; Hans-Heiner Lautenschläger, Pulheim-Stommeln; Brigitte Stoll, Pulheim, and Manfred Probst, Frechen, all of Fed. Rep. of Germany, assignors to A. Nattermann & Cie GmbH, Cologne, Fed. Rep. of Germany

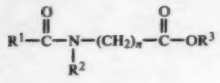
Filed Nov. 6, 1981, Ser. No. 318,964

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1980, 3042482

Int. Cl.³ C09F 5/00; C07C 101/453

U.S. Cl. 260—404 18 Claims

1. N-Benzoyl-ω-anilinoalkane carboxylic acid of the general formula I



wherein

n is a positive integer ranging from 7 to 10;

R^1 and R^2, which may be different from each other or identical, represent the unsubstituted phenyl group or the phenyl group substituted by 1 to 4 identical or different groups selected from the group of halogen, C_{1-4}-alkyl, C_{1-4}-alkoxy, C_{1-4}-alkylthio, halogeno-C_{1-4}-alkyl, hydroxy, phenoxy, benzyloxy, acyloxy or di-C_{1-4}-alkylamino,

R^3 is hydrogen, an alkali ion or a straight or branched saturated hydrocarbon group having 1 to 7 carbon atoms or the benzyl group.

4,386,032

LIQUID POLYISOCYANATE COMPOSITIONS

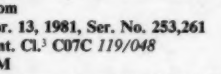
Jeffrey Hughes, Worsley, and Kevin E. Keane, Middleton, both of England, assignors to Imperial Chemical Industries Limited, United Kingdom

Filed Apr. 13, 1981, Ser. No. 253,261

Int. Cl.³ C07C 119/048

U.S. Cl. 260—453 AM 4 Claims

1. A method for the preparation of a liquid diphenylmethane diisocyanate composition which comprises reacting one molar proportion of substantially pure 4,4'-diphenylmethane diisocyanate, containing at least 97% of the 4,4' isomer and any impurity being largely the 2,4' isomer and traces of 2,2' isomer, with from 0.01 to 0.8 molar proportions of a monoalkoxy polyalkylene glycol of the formula:



wherein R represents an alkyl group containing from 1 to 12 carbon atoms, R^1 represents hydrogen or an alkyl group containing from 1 to 3 carbon atoms and n is an integer of from 2 to 58, the reaction being performed at a temperature of from 100° to 250° C. and in the presence of a catalyst for the NCO-/OH reaction whereby the urethane formed by the reaction of the monoalkoxy polyalkylene glycol with the diisocyanate reacts with further diisocyanate to form a major proportion of allophanate.

4,386,033

PROCESS FOR THE CONTINUOUS THERMAL CLEAVAGE OF CARBAMIC ACID ESTERS AND PREPARATION OF ISOCYANATES FROM THE PRODUCTS THEREOF

Klaus König, Leverkusen, and Peter Heitkämper, Dormagen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Bayerwerk, Fed. Rep. of Germany

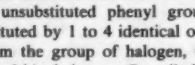
Filed Dec. 16, 1981, Ser. No. 331,412

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1980, 3047898

Int. Cl.³ C07C 118/00

U.S. Cl. 260—453 P 23 Claims

1. A continuous process for the thermal cleavage of a carbamic acid ester into an isocyanate of the formula R^1—NCO and an alcohol of the formula R^2—OH and separation of the thus-produced isocyanate and alcohol, said carbamic acid ester having a boiling point of at least 200° C. and corresponding to the general formula:



in which

R^1 represents an aliphatic hydrocarbon group having a total of 1 to 18 carbon atoms which may be olefinically unsaturated and/or carry inert substituents, a cycloaliphatic hydrocarbon group having a total of 3 to 18 carbon atoms which may be olefinically unsaturated and/or carry inert substituents; an araliphatic hydrocarbon group having 7 to 18 carbon atoms which may carry inert substituents, or an aromatic hydrocarbon group having 6 to 18 carbon atoms which may carry inert substituents; and

R^2 represents a group obtained by removal of the hydroxyl group from a primary or secondary aliphatic, cycloaliphatic or araliphatic alcohol having a boiling point which is at least 50° C. above or below the boiling point of the isocyanate corresponding to the formula R^1—NCO

comprising:

(a) continuously introducing the carbamic acid ester R^1—NH—CO—OR^2 into a reaction vessel;

(b) boiling the carbamic acid ester for a period such that the average dwell time is from 1 to 20 hours at a temperature of from 160° to 260° C. and a pressure of from 0.001 to 2 bar to partially cleave the carbamic acid ester into isocyanate and alcohol;

(c) partially condensing the vapor product of (b) in a first fractionation column to form (i) a condensate containing carbamic acid ester and (ii) a gaseous mixture;

(d) returning the condensate (i) to the reaction vessel; and

(e) partially condensing the gaseous mixture (ii) in a second fractionation column to form a condensate made up of residual carbamic acid ester and the higher boiling of the isocyanate and alcohol fractions.

14. A process for the production of a monoisocyanate of the formula

which has a boiling point at least 50° C. below the boiling point of the isocyanate R^1—NCO wherein

R^1 and R^3 each may represent an aliphatic hydrocarbon group having a total of 1 to 18 carbon atoms which may be olefinically unsaturated and/or carry inert substituents, a cycloaliphatic hydrocarbon group having a total of 3 to 18 carbon atoms which may be olefinically unsaturated and-/or carry inert substituents, an araliphatic hydrocarbon group having 7 to 18 carbon atoms which may carry inert substituents, or an aromatic hydrocarbon group having 6 to 18 carbon atoms which may carry inert substituents

provided that the required difference in boiling point is met comprising:

(a) continuously reacting (i) a carbamic acid ester corresponding to the formula

wherein

R^2 represents a group such as is obtained by removal of the hydroxyl group from a primary or secondary aliphatic, cycloaliphatic or araliphatic alcohol whose boiling point is at least 50° C. above or below the boiling point of the isocyanate corresponding to the general formula R^1—NCO

and R^1 and R^3 are as defined above

with (ii) a condensate containing an isocyanate corresponding to the general formula R^1—NCO and a carbamic acid ester corresponding to the formula R^1—NH—CO—OR^2 in an amount such that the molar ratio of carbamic acid ester R^3—NH—CO—OR^2 to isocyanate R^1—NCO is within the range from 1:1 to 1:10 at a temperature of from 50° to 200° C. and a pressure such that the reaction mixture boils to effect transurethanation;

(b) collecting the gaseous product mixture formed in (a); and

(c) separating the isocyanate R^3—NCO from the mixture of (b).

4,386,034

SULFAMATED AMINO ACID AMIDES

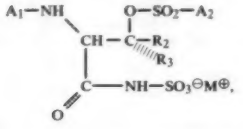
David M. Floyd, Pennington; Alan W. Fritz, Kendall Park, and Christopher M. Cimarusti, Pennington, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 230,837, Feb. 2, 1981. This application Feb. 10, 1982, Ser. No. 347,595

Int. Cl.³ C07C *143/68*

U.S. Cl. 260—456 A **2 Claims**

1. A compound having the formula



wherein A_1 is alkylcarbonyl, arylcarbonyl, alkoxycarbonyl or aryloxycarbonyl; A_2 is alkyl, phenyl, or substituted phenyl, one of R_2 and R_3 is hydrogen and the other is hydrogen, alkyl, cycloalkyl, phenyl or substituted phenyl; and $M^{\oplus}$ is a cation.

4,386,035

INTERMEDIATES FOR PREPARATION OF 3-BROMO-4-FLUORO-BENZYL ALCOHOL

Fritz Maurer, Wuppertal; Uwe Priesnitz, Solingen; Hans-Jochem Riebel; Rainer Fuchs, both of Wuppertal, and Erich Klauke, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

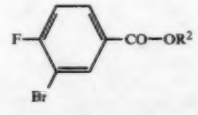
Filed Sep. 14, 1981, Ser. No. 301,510

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1980, 3036967

Int. Cl.³ C07C *69/96*

U.S. Cl. 260—463 **3 Claims**

1. A 3-bromo-4-fluoro-benzoic acid derivative of the formula



in which R^2 is an alkoxycarbonyl group.

4,386,036

PROCESS FOR THE PREPARATION OF VINYLPHOSPHONIC ACID

Hans-Jerg Kleiner, Kronberg, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

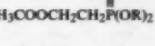
Filed Mar. 18, 1982, Ser. No. 359,234

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1981, 3110975

Int. Cl.³ C07F *9/38*

U.S. Cl. 260—502.4 R **2 Claims**

1. A process for the preparation of vinylphosphonic acid, which comprises heating a 2-acetoxyethanephosphonic acid dialkyl ester of the general formula



in which R denotes an alkyl group having 1 to 4 carbon atoms, in the presence of acid or basic catalysts at 150° to 270° C. with elimination of an alkyl acetate and thereafter hydrolyzing the remaining reaction mixture with water at temperatures between 150° and 230° C. while simultaneously distilling off the alcohol formed.

4,386,037

SULPHONIC ACIDS OF TOLYL ETHER SULPHONES

Hans-Peter Baumann, Guntengarten, Switzerland, assignor to Sandoz Ltd., Basel, Sweden

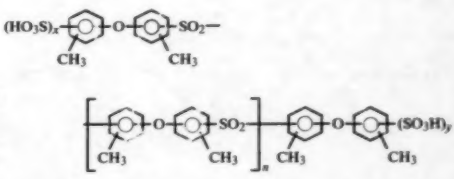
Filed Mar. 24, 1981, Ser. No. 247,204

Claims priority, application Switzerland, Mar. 28, 1980, 2489/80

Int. Cl.³ C07C *143/36*

U.S. Cl. 260—512 C **8 Claims**

1. A compound of formula I,



in which n is 0 to 6, each of x and y, independently, is 0 or 1 with the proviso that x+y is at least one, a salt thereof.

4,386,038

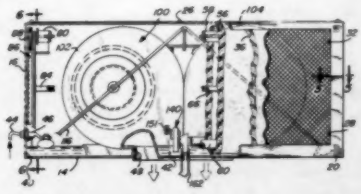
EVAPORATIVE COOLER APPARATUS

Dean M. Walker, Loveland, Colo., assignor to Walker Manufacturing Company, Fort Collins, Colo.

Filed Nov. 20, 1981, Ser. No. 323,671

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—80 **7 Claims**



1. In an evaporative cooling apparatus in which a belt of material, to which a liquid may cling and which is transparent

to air flow therethrough so as to achieve evaporation of said liquid, is moved through a reservoir of said liquid and then exposed to said air flow, the combination comprising:

a drum having a continuous peripheral wall substantially closed by space-opposed end walls:

means for mounting said drum for circumferential movement of its periphery:

separating means disposed between said end walls to define a plurality of compartments successively spaced circumferentially around the axis of rotation of said drum;

means defined only in at least one of said end walls for inletting liquid into respective one of said compartments while immersed in the liquid contained within said reservoir and for outletting the liquid from the corresponding compartment in a controllable amount as said drum revolves, said inletting and outletting means including a plurality of openings in only at least one of said end walls and individually communicating with the respective different ones of said compartments;

a plurality of spouts projecting outwardly from said one wall and individually aligned with respective different ones of said openings;

means for effecting rotation of said drum as said belt is moved;

and means for diverting the liquid outletted from said drum away from said reservoir.

4,386,039

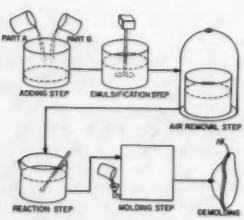
PROCESS FOR FORMING AN OPTICALLY CLEAR POLYURETHANE LENS OR CORNEA

Michael Szycher, Lynnfield, Mass., assignor to Thermo Electron Corporation, Waltham, Mass.

Division of Ser. No. 120,345, Feb. 11, 1980, Pat. No. 4,285,073. This application Feb. 27, 1981, Ser. No. 238,767

Int. Cl.³ B29D *11/00*

U.S. Cl. 264—1.1 **6 Claims**



3. A process for forming an artificial cornea for implantation in a human eyeball comprising the following steps:

(a) providing reactants comprising 4,4'-dicyclohexylmethane diisocyanate, polytetramethylene ether glycol and ethylene oxide-capped trimethylol propane;

(b) mixing the reactants to form a reactive mixture;

(c) degassing the reactive mixture to remove entrained air;

(d) forcing the reactive mixture into a mold having the configuration of an artificial cornea;

(e) curing the mixture in the mold to form a polyurethane elastomer; and

(f) removing the cornea-shaped clear elastomer from the mold.

4,386,040

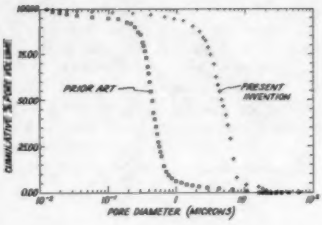
METHOD OF PRODUCING LITHIUM NICKEL OXIDE CATHODE FOR MOLTEN CARBONATE FUEL CELL

Charles E. Baumgartner, Schenectady, and Kenneth P. Zarnoch, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 31, 1981, Ser. No. 297,609

Int. Cl.³ C04B *35/65*

U.S. Cl. 264—56 **9 Claims**



1. A process for producing a cathode for a molten carbonate fuel cell, said cathode being composed of $Li_xNi_{(1-x)}O$ where x ranges from about 0.005 to about 0.25, which consists essentially of providing a mixture of elemental nickel powder and Li_2O or precursor thereof, said Li_2O or precursor thereof having an average particle size not significantly larger than the average particle size of said elemental nickel powder, forming said mixture into a green body and firing said green body in air at a temperature ranging from about 600° C. to about 1000° C. producing a fired body comprised of said $Li_xNi_{(1-x)}O$, said precursor of Li_2O decomposing at or below said firing temperature to produce Li_2O and by-product gas, said Li_2O or precursor of Li_2O being used in an amount sufficient to produce said $Li_xNi_{(1-x)}O$, said cathode having a porosity of at least about 50% by volume of the total volume of said cathode.

4,386,041

METHOD FOR THE MANUFACTURE OF A CUSHIONING MATERIAL WHICH COMPRISES COMPRESSING SYNTHETIC FILAMENTS, APPLYING ADHESIVE AND HEATING, AND PRESSING THE RESULTANT MATERIAL IN THE PRESENCE OF STEAM

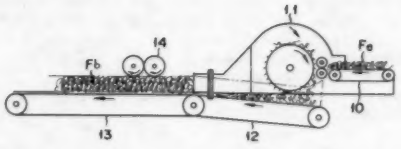
Sadaaki Takagi, 39, Mikage-cho, Okazaki-shi, Aichi-ken, Japan

Filed Jun. 19, 1981, Ser. No. 275,324

Claims priority, application Japan, Jun. 28, 1980, 55-88375

Int. Cl.³ D04H *1/64*

U.S. Cl. 264—128 **9 Claims**



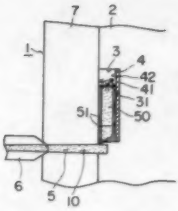
1. A method for the manufacture of a cushioning material, comprising the steps of compressing three-dimensionally crimped short synthetic filaments to form a shaped mass of filaments, applying an adhesive agent to the resultant shaped mass of filaments, then heating the shaped mass thereby drying the adhesive agent adhering to said short filaments and uniting adjacent filaments at the points of their mutual contact, and pressing the resultant crude cushioning material in the presence of steam thereby compressing the crude cushioning material.

4,386,042

MOLDING OF SYNTHETIC RESIN ARTICLE HAVING A HARD COATING

Akinori Tatebayashi, 3-54-6, Yamada-Nishi, Suita City, Osaka, Japan

Filed May 22, 1981, Ser. No. 266,503
Claims priority, application Japan, Feb. 10, 1981, 56-18668; Feb. 10, 1981, 56-18669
Int. Cl.³ B29D 9/00
U.S. Cl. 264—135 11 Claims



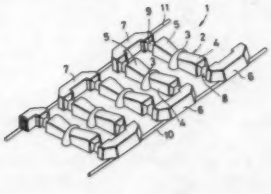
1. A method for preparation of a molded product having a desired surface-hardness on its surface, comprising:
(1) cutting a polycarbonate film or sheet into substantially the same form as or similar form to the exterior shape, to be hard-coated thereon, of the synthetic resin molded product; the film or sheet having a silane derivative or acrylic resin derivative hard-coating layer on its surface;
(2) placing the cut piece of the polycarbonate film or sheet on a cavity surface of the mold for making the molded-product;
(3) injecting under a high pressure a molten thermoplastic resin for the formation of the molded product from an injection molding means into the cavity by means of a high pressure injection molding technique; and
(4) removing the molded product from the mold as a final product having the desired surface-hardness.

4,386,043

METHOD OF AND APPARATUS FOR MOLDING A CONTINUOUS THERMOPLASTIC COUPLING ELEMENT STRIP FOR SLIDE FASTENERS

Kiyoshi Takeshima, Namerikawa, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Aug. 10, 1981, Ser. No. 291,817
Claims priority, application Japan, Aug. 15, 1980, 55-112467
Int. Cl.³ B29D 5/00
U.S. Cl. 264—167 6 Claims



1. A method of molding a continuous zigzag-shaped strip of thermoplastic coupling elements for slide fasteners, comprising:
(a) continuously rotating a die wheel having an endless zigzag-shaped peripheral cavity including a plurality of substantially parallel transverse sections and a plurality of longitudinal sections disposed alternately at opposite sides of the cavity and extending one between each adjacent pair of the transverse sections, each of the transverse sections having an enlarged central portion for forming a head portion of the individual coupling element, and a pair of transverse portions extending in opposite directions from the central portion for forming a pair of leg portions of the individual coupling element, each of the longitudinal sections being adapted to form a connecting portion extending between an adjacent pair of the coupling elements, the cavity of the die wheel, as the latter is rotated, being advanced such that the central portions of the transverse sections successively pass a fixed extrusion nozzle;
(b) delivering heated thermoplastic material from the extrusion nozzle to the continuously moving cavity at the central portions of the transverse sections successively; and
(c) retarding the flow of the delivered thermoplastic material flowing in a path between the central portions of the transverse sections and the longitudinal sections to thereby retain much of the delivered thermoplastic material adjacent to the central portions of the individual transverse sections.

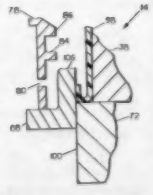
2. An apparatus for molding a continuous zigzag-shaped strip of thermoplastic coupling elements for slide fasteners, comprising:
(a) a fixed extrusion nozzle for delivering heated thermoplastic material;
(b) a continuously rotatable die wheel having an endless zigzag-shaped peripheral cavity including a plurality of substantially parallel transverse sections and a plurality of longitudinal sections disposed alternately at opposite sides of said cavity and extending one between each adjacent pair of said transverse sections, each of said transverse sections having an enlarged central portion for forming a head portion of the individual coupling element, and a pair of first and second transverse portions extending in opposite directions from said central portion for forming a pair of first and second leg portions of the individual coupling element, each of said longitudinal sections being adapted to form a connecting portion extending between an adjacent pair of the coupling elements, said cavity of said die wheel, as the latter is rotated, being advanced such that said central portions of said transverse sections successively pass said fixed extrusion nozzle to receive the thermoplastic material therefrom; and
(c) means for retarding the flow of the delivered thermoplastic material flowing in a path from said central portions of said transverse sections to said longitudinal sections to thereby retain much of the delivered thermoplastic material adjacent to said central portions of said transverse sections.

4,386,044

METHOD OF FORMING A CUP-LIKE CONTAINER

Carl Arndt, Wauconda, and Martin Mueller, Wonderlake, both of Ill., assignors to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 92,893, Nov. 9, 1979, Pat. No. 4,279,585.
This application Jul. 2, 1981, Ser. No. 279,911
Int. Cl.³ B29C 13/00
U.S. Cl. 264—230 2 Claims



1. The method of forming a cup-like container rim including the steps of;
(a) mounting a sleeve of thermoplastic sheet material on a mandrel,

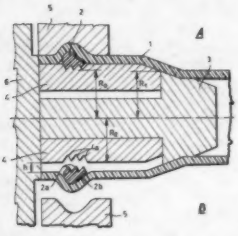
(b) holding said sleeve in position on said mandrel by exerting a first radial force outwardly against the interior rim edge of said sleeve,
(c) heating the container rim in the area where it is being held by said radial force,
(d) expanding the rim area in a radial direction by the application of a second radial force outwardly against the interior rim edge of said sleeve,
(e) translating the sleeve along its longitudinal axis while holding the expanded rim edge fixed against an abutment ring, and
(f) causing the rim to upset, thus forming a bead on the container.

4,386,045

METHOD AND APPARATUS FOR MANUFACTURING THE SOCKET PORTION OF A PLASTIC PIPE

Voitto Väisänen, Nastola, Finland, assignor to Asko Oy, Nastola, Finland

Filed May 27, 1981, Ser. No. 267,489
Claims priority, application Finland, Mar. 23, 1981, 810891
Int. Cl.³ B29C *1/00, 17/07;* B29D *3/00*
U.S. Cl. 264—249 **3 Claims**



1. A method for forming an annular groove in the socket portion of a plastic pipe and installing a seal ring in the annular groove, comprising: Pushing a sealing ring onto an expandible mandrel while it is radially retracted, pushing a plastic pipe in a heat softened condition onto the mandrel and over said sealing ring by relative axial movement of said pipe and said mandrel and locking said ring onto said mandrel by at least one groove of said ring engaging a mating at least one peripheral projection of said mandrel, locking being accomplished by expanding said mandrel into said seal ring, pressing the periphery of said pipe between shaping jaws, cooling said pipe and releasing said pipe and said seal ring from said mandrel by radially retracting said mandrel.

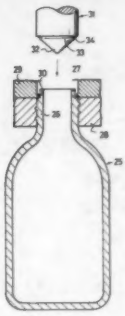
4,386,046

NECK ORIENTING METHOD OF BOTTLES OF SATURATED POLYESTER RESINS

Yataro Yoshino; Sadao Suzuki, and Takuzo Takada, all of Tokyo, Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

Division of Ser. No. 92,428, Nov. 7, 1979, Pat. No. 4,297,306. This application Jun. 4, 1981, Ser. No. 270,292
Int. Cl.³ B29C *17/00, 17/07*
U.S. Cl. 264—296 **2 Claims**

1. In a method of producing a container from a parison of saturated polyester resin, a method of forming a lip portion comprising the steps of:
(a) forming said parison with a neck portion of predetermined thickness and a lip portion defining an opening into said parison, said lip portion having a lesser predetermined thickness than said neck portion;
(b) holding said neck portion of said parison in a conforming neck holding device to prevent deformation of said neck portion;
(c) heating said lip portion to an orientable temperature;
(d) inserting an orienting rod into said lip portion opening, said orienting rod having a converging tapered head at its leading end and a straight body portion, said straight body portion and the largest diameter of said tapered head being of a diameter greater than the inner diameter of said lip portion prior to insertion of said orienting rod, said largest diameter of said tapered head being smaller than



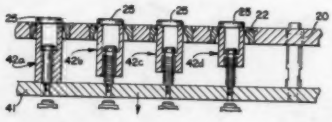
the diameter of said straight body portion such that a stepped shoulder is defined therebetween, said rod being inserted into said lip portion opening until said stepped shoulder abuts said lip portion, thereby stretching said lip portion outwardly by the insertion of said head, such that said lip portion conforms to the shape of said stepped shoulder, thereby increasing the outside diameter and the inside diameter of said lip portion without affecting said neck portion.

4,386,047

MOLDED ARTICLE KNOCK-OUT METHOD

Jerry D. Reichenbach, Carpentersville, and Jamie R. Passarelli, Schaumburg, both of Ill., assignors to CR Industries, Elgin, Ill.

Division of Ser. No. 124,068, Feb. 25, 1980, Pat. No. 4,330,256. This application Mar. 22, 1982, Ser. No. 360,366
Int. Cl.³ B28B *7/10*
U.S. Cl. 264—334 **7 Claims**



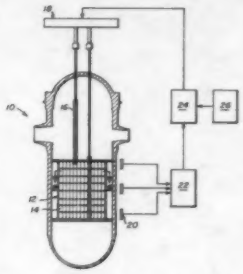
1. A method for removing a plurality of molded articles from a retained position in a member of a molding machine subsequent to a molding operation comprising the steps of
positioning a force applying means in alignment with the plurality of molded articles retained in the member of the molding machine,
moving said force applying means toward said plurality of molded articles for engagement therewith,
continuing movement of said force applying means toward said plurality of molded articles for a force applying stroke to remove said plurality of molded articles, and
applying successive forces to respective numbers of said plurality of molded articles at predetermined positions of said force applying means during said force applying to remove sequentially said plurality of molded articles.

4,386,048

VARIABLE OVERLAP CONTROL

Joseph R. Humphries, Toronto, Canada, and Richard W. Knapp, West Simsbury, Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Nov. 24, 1980, Ser. No. 209,572
Int. Cl.³ G21C 7/36
U.S. Cl. 376—216 1 Claim



1. In a nuclear reactor having at least two control rod Groups A and B residing in the core for controlling the power level generated by the core, and wherein Group A is at a higher elevation in the core than Group B, the improved method of controlling the core axial power distribution comprising the steps of:

a. monitoring the core axial power distribution to provide a measured index;

b. comparing the measured index with an axial power distribution target index;

c. determining whether the measured index exceeds the target index;

d. determining which axial portion of the core is generating an excessive proportion of the core power output;

e. moving each Group A and B farther apart by substantially the same distance if the lower portion of the core is generating excessive power; and

f. moving each Group A and B closer together by substantially the same distance if the upper portion of the core is generating excessive power; and

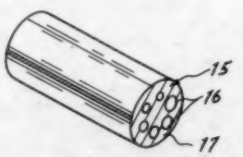
g. whereby the axial imbalance in the power distribution is reduced and the axial power distribution is brought within the target index.

4,386,049

HIGH TEMPERATURE MEASURING DEVICE

Richard D. Tokarz, West Richland, Wash., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 29, 1981, Ser. No. 229,497
Int. Cl.³ G01K 11/00
U.S. Cl. 376—247 7 Claims



1. A temperature measuring device for indicating temperature during short time periods at a very high design temperature range at discrete locations within a system normally maintained at a working temperature substantially lower than the design temperature range;

said apparatus comprising:

a homogenous base structure containing a plurality of individual walled cells, the base structure being made from a material having a progressively decreasing coefficient of elasticity within the design temperature range, the elastic limit of the material being above the design temperature range;

and a predetermined quantity of inert material confined within the walls of each cell within the base structure;

the cells of said base structure being dimensionally stable while confining the inert material at the working temperature;

said inert material within a cell having a gaseous pressure which permanently deforms the confining cell walls at cell temperatures within the design temperature range.

4,386,050

PROCESS, APPARATUS AND MANUFACTURE RELATING TO HIGH-PURITY, SODIUM AMALGAM PARTICLES USEFUL IN LAMP MANUFACTURE

Scott Anderson, P.O. Box 2680, Champaign, Ill. 61820

Division of Ser. No. 70,839, Aug. 29, 1979, Pat. No. 4,238,173, which is a division of Ser. No. 654,416, Feb. 2, 1976, Pat. No. 4,216,178. This application Aug. 12, 1980, Ser. No. 177,391
Int. Cl.³ B22F 1/00
U.S. Cl. 420—526 8 Claims

1. Free-flowing amalgam particles composed of from about 2 to about 30 weight percent sodium and from about 98 to about 70 weight percent mercury, said particles containing less than 10 ppm of sodium oxides.

4,386,051

TIN, LEAD, ZINC ALLOY

Robert E. Edgington, 120 S. Genesse, Bellaire, Mich. 49615

Division of Ser. No. 188,699, Sep. 19, 1980, Pat. No. 4,352,450. This application Jul. 22, 1982, Ser. No. 400,939
Int. Cl.³ C22C 30/04, 30/06, 18/00
U.S. Cl. 420—589 1 Claim

1. A tin/lead/zinc alloy consisting essentially of from 1.7 to 2.2 percent aluminum, from 0.01 to 0.02 percent magnesium, from 45.9 to 50.4 percent zinc, from 14.2 to 34 percent tin, and from 16.6 to 36.7 percent lead.

4,386,052

COMPOSITION AND METHOD FOR SUPPRESSING VAPOR LOSS OF VOLATILE HYDROCARBONS

Gerard P. Canevari, Cranford, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Division of Ser. No. 702,692, Jul. 6, 1976, Pat. No. 4,326,986. This application Oct. 30, 1981, Ser. No. 316,889
Int. Cl.³ C09K 3/00; B01J 19/16
U.S. Cl. 422—42 6 Claims

1. A method for retarding evaporation from a body of liquid hydrocarbons consisting essentially of applying a vapor retarding mixture to the surface of said body of hydrocarbon in an amount sufficient to provide a continuous thin film of vapor retarding mixture on the surface thereof, whereby said film offers resistance to the transfer across the film of hydrocarbon from said liquid hydrocarbon body, said evaporation retarding mixture consisting essentially of a surfactant and a polyglycol, said surfactant being a strong detergent which is insoluble in the liquid hydrocarbon and said polyglycol being a dihydroxy derivative of a normal aliphatic alkane having a molecular weight of from about 100 to about 1200.

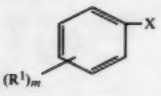
4,386,053

TEST PIECE FOR DETECTION OF OCCULT BLOOD

Hiroshi Motobayashi, Tokyo, Japan, assignor to Terumo Corporation, Tokyo, Japan

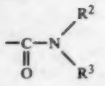
Filed Aug. 31, 1981, Ser. No. 297,823
Int. Cl.³ G01N *33/72*
U.S. Cl. 422—56 **15 Claims**

1. In a test piece for the detection of occult blood or another peroxidatively active substance in body fluids including a substrate impregnated with an organic hydroperoxide, a chromogen, a buffer, and a stabilizer, the improvement wherein said stabilizer comprises at least one compound of the general formula I:

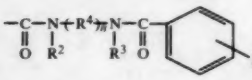


(I)

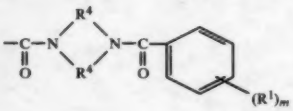
wherein, m denotes an integer of 1 to 5, R^1 denotes one member selected from the group consisting of methyl group, lower alkoxy group, halogen atoms and hydrogen atom, and X denotes one member selected from the group consisting of



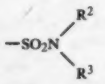
where, R^2 and R^3 each denote an alkyl group having 1 or 2 carbon atoms,



where, m, R^1, R^2, and R^3 are as defined above, R^4 denotes an alkylene group having 1 to 6 carbon atoms, and n is 0 or 1,



wherein, m, R^1, and R^4 are as defined above, and



where, R^2 and R^3 are as defined above.

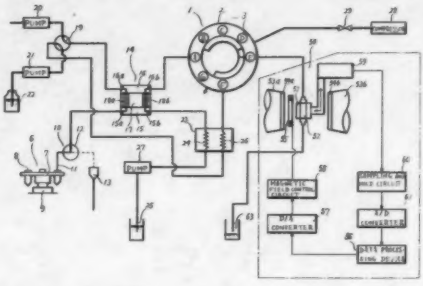
4,386,054

SPIN IMMUNOASSAY APPARATUS

Makoto Takeuchi; Ekuo Yoshida, and Masahiro Kohno, all of Akishimashi, Japan, assignors to JEOL Ltd., Tokyo, Japan

Filed Oct. 13, 1981, Ser. No. 310,745
Int. Cl.³ G01N *33/16*
U.S. Cl. 422—63 **3 Claims**

1. A spin immunoassay system comprising automatic means for sampling one of a plurality of specimen solutions, an automatic reaction system for mixing the sample solution with reagent which consists of antibody coupled with a spin-labelled antigen by antigen-antibody reaction, an electron spin resonance device having a cavity resonator having a fixed testing cell, said electron spin resonance device providing a magnetic field in the vicinity of the fixed testing cell and means for adjusting the intensity of said field such that a maximum or minimum differential value of an electron spin resonance signal



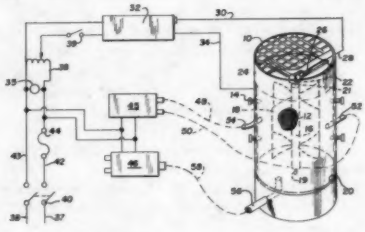
of the spin-labelled agent will be detected, and means comprising conduits for transferring the mixed specimen solution and reagent into said fixed cell in the cavity resonator of the electron spin resonance device.

4,386,055

OZONATOR WITH AIR ACTUATED ROTOR

Thomas D. McBride, Washington Township, Bergen County, N.J., assignor to Joan McBride, Westwood, N.J.

Filed Dec. 19, 1980, Ser. No. 218,369
Int. Cl.³ C01B *13/12*
U.S. Cl. 422—186.18 **21 Claims**



1. Apparatus in and by which ozone is produced by a corona discharge in the presence of flowing air, said apparatus including:

(a) a source of high voltage delivered to said apparatus by at least first and second electrical current conductors;

(b) a housing adapted to receive said conductors and having a tubular confine in which a supporting means is formed and in which there is a plurality of adjustably mounted electrical conducting members carried in said supporting means and in current conducting association with one of said electrical conductors;

(c) a first electrical conductive means supported by and arranged about the tubular confine and connecting the adjustable means to one side of the source of high voltage;

(d) a shaft member positioned substantially at the axis of said tubular confine portion of the housing and carrying a plurality of substantially rigid and like positioned blades, each blade disposed in a plane substantially normal to the axis of the shaft and providing an assembly which is carried by associated bearing means, and as an assembly is moved in a rotational manner with each blade having electrical conducting means provided at its outer edge

portions and as the blades are moved to sweep in a circular path;

(e) a second electrical conducting means leading from the source of high voltage to the conducting means provided at the outer edge portion of each blade;

(f) means for producing a rotation of the blade assembly, and

(g) means for conducting the produced ozone from within the tubular confine portion of the housing, said ozone produced by said corona discharge of high voltage when and as the conducting outer edge portions of the rotatably moving blades are brought near to, opposite and past a plurality of electrical conducting members spaced a selected distance from said conducting outer edge portion of the blades so that a corona discharge is discontinuously produced when and as the rotating blade is moved therepast and high voltage is caused to flow as an arc through an air supply.

4,386,056

RECOVERY OF YTTRIUM AND EUROPIUM FROM CONTAMINATED SOLUTIONS

Herman R. Heytmeijer, Whippany, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 30, 1982, Ser. No. 403,460
Int. Cl.³ C01F *17/00*
U.S. Cl. 423—21.5 **3 Claims**

1. A method for recovering dissolved yttrium and europium from a solution including same, but which is contaminated with divalent compounds said method comprising:

adding to said contaminated solution hydrogen peroxide in predetermined amount and concentration sufficient to maintain the europium ions in the trivalent state,

passing the resultant solution through a cation resin exchange column to remove therefrom the trivalent yttrium and trivalent europium as well as divalent metallic impurities,

rinsing said exchange column with deionized water to remove therefrom residual contaminated solution,

eluting said rinsed exchange column with a predetermined amount of relatively weak inorganic acid solution having a concentration which is adequate to strip said divalent metal impurities yet not sufficiently strong to strip the yttrium and europium from the exchange column resin,

stripping said exchange column by rinsing same with a predetermined amount of inorganic acid solution of sufficient strength to strip the yttrium and europium from the exchange column resin to obtain a strip solution,

rinsing said exchange column with deionized water to obtain a rinse solution,

combining said strip and rinse solutions to form a value solution,

heating said value solution to a predetermined temperature and adding thereto a predetermined amount of oxalic acid to precipitate yttrium oxalate and europium oxalate therefrom,

collecting said precipitate of yttrium oxalate and europium oxalate and rinsing same to remove possible residual contaminants, drying, and firing said precipitate to form the recovered yttrium oxide and europium oxide.

4,386,057

RECOVERY OF IRON OXIDE FROM COAL FLY ASH

Michael S. Dobbins, and Marlyn J. Murtha, both of Ames, Iowa, assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 17, 1982, Ser. No. 358,958
Int. Cl.³ C01G *49/02*
U.S. Cl. 423—138 **9 Claims**

1. A process for recovering iron oxide from coal fly ash containing iron oxide, silica and alumina which comprises:

separating the magnetic portion from the non-magnetic portion of the fly ash,

contacting the magnetic portion of the fly ash with a strong alkali solution at a temperature and for a period of time sufficient to leach most of the silica and alumina from the fly ash leaving a solid residue containing the iron oxide, forming a precipitate which is an acid-soluble salt of aluminosilicate hydrate,

separating the alkali solution from the precipitate and the solid residue; and

contacting the precipitate and solid residue with a strong mineral acid to dissolve the precipitate whereby the solid residue remaining contains at least 90 weight percent Fe_2O_3.

4,386,058

PROCESS FOR REMOVING SO_X AND NO_X COMPOUNDS FROM GAS STREAMS

Robert H. Hass, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Mar. 11, 1981, Ser. No. 242,633
Int. Cl.³ C01B *21/00, 17/00*
U.S. Cl. 423—235 **15 Claims**

1. A process for removing NO_X compounds from a feed gas stream and producing a purified product gas stream of reduced NO_X content, which process comprises:

(1) contacting a feed gas stream containing one or more nitrogen compounds selected from the group comisting of NO and NO_2 with an absorbent composition comprising a ferrous chelate-containing aqueous liquid having dissolved therein formic acid and an alkanolamine containing a tertiary amine functional group under conditions such that at least some of said NO_X compounds are absorbed into said absorbent, thereby producing a purified product gas stream of reduced NO_X content;

(2) withdrawing from step (1) a liquid stream of spent absorbent containing absorbed NO_X compounds in dissolved form;

(3) regenerating said spent absorbent to a form active for absorbing NO_X compounds by adding formic acid or oxalic acid to said spent absorbent and heating the resulting admixture to a temperature sufficient to lower the concentration of said dissolved NO_X compounds;

(4) separating the products of step (3) at least into a product gas stream containing nitrogen and a regenerated liquid absorbent;

(5) recycling at least some of said regenerated liquid absorbent obtained in step (4) to step (1); and

(6) discharging a purified product gas stream of reduced NO_X content from step (1) and discharging said product gas stream containing nitrogen from step (4).

4,386,059

ZINC HYDROXY PHOSPHITE COMPLEX

William W. Reichert, Trenton; Charles A. Cody, East Windsor, and Carle H. Youngken, Hightstown, all of N.J., assignors to NL Industries, Inc., New York, N.Y.

Filed May 7, 1982, Ser. No. 376,094
Int. Cl.³ C01B *15/16, 25/26*
U.S. Cl. 423—307 **14 Claims**

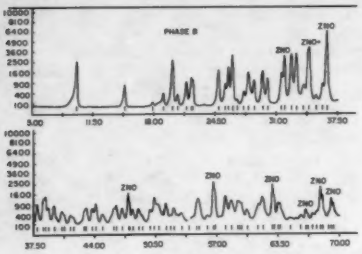
1. A substantially pure composition of matter consisting essentially of a zinc hydroxy phosphite complex represented by the theoretical structural formula $[2Zn(OH)_2.ZnHPO_3].X\text{-}ZnO$ wherein X is a number from 0 to 17 and wherein the structure has infrared absorption frequencies at 3506; 3472; 3282; 3163; 2401; 2361, 1079; 947; 867; and 796 cm^{-1}, ± 4.0 cm^{-1}, and X-ray diffraction d(A) spacings at 9.04; 5.94; 4.44; 3.58; 3.44; 3.38; 2.75; 2.70; and 1.67; ± 0.02 A.

5. A process for preparing a zinc hydroxy phosphite complex, which comprises:

(a) forming an aqueous slurry containing zinc oxide, phosphorous acid and a zinc hydroxy phosphite complex promoter;

(b) heating the slurry for a sufficient time to form a zinc hydroxy phosphite complex represented by the theoreti-

cal structural formula $[2Zn(OH)_2.ZnHPO_3].XZnO$ wherein X is a number from 0 to 17 and wherein the structure has infrared absorption frequencies at 3506; 3472; 3282; 3163; 2401; 2361; 1079; 947; 867; and 796



cm^{-1}, ± 4.0 cm^{-1}, and X-ray diffraction d(A) spacings at 9.04; 5.94; 4.44; 3.58; 3.44; 3.38; 2.75; 2.70; and 1.67; ± 0.02 A;

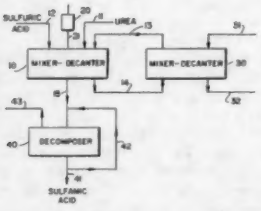
(c) and recovering the zinc hydroxy phosphite complex.

4,386,060

PROCESS FOR THE PREPARATION OF SULFAMIC ACID

Philippe Leclercq, Lille, and Jacques Luternauer, Bondues, both of France, assignors to Produits Chimiques Ugine Kuhlmann, Courbevoie, France

Filed Jan. 29, 1982, Ser. No. 343,831
Claims priority, application France, Jan. 30, 1981, 81 01786
Int. Cl.³ C01B *17/00*
U.S. Cl. 423—389 **12 Claims**



1. A process for the production of sulfamic acid by reacting urea, sulfuric anhydride, and sulfuric acid wherein the sulfuric anhydride fed to the process is dissolved in a halogenated fluorocarbon or a mixture of halogenated fluorocarbons, the fluorocarbon or fluorocarbon mixture having a boiling point of from 0° C. to less than 100° C.

4,386,061

METHOD OF TREATING PYRITE BEARING POLYMETALLIC MATERIAL

Dzhantore N. Abishev, ulitsa Michurina, 21/3, kv. 44; Evnei A. Buketov, ulitsa Lenina, 56, kv. 3; Nazymkul Baltynova, prospekt Sovetsky, 52a, kv. 40; Vitaly P. Malyshev, ulitsa Botanicheskaya, 14, kv. 52; Turabai A. Oralov, ulitsa Sovetskoi Konstitutsii, 18, kv. 348; Egizbai S. Sakpanov, bulvar Mira, 74/2, kv. 42; Abubakir K. Kobzhasov, prospekt Sovetsky, 75, kv. 12, and Kazken N. Orazalina, ulitsa Dzhambula, 129, kv. 12, all of Karaganda, U.S.S.R.

Filed Apr. 24, 1981, Ser. No. 256,983
Int. Cl.³ C01B *17/06*; C01G *3/12, 49/12*
U.S. Cl. 423—571 **4 Claims**

1. Method of recovering sulphur, iron and non-ferrous metals from polymetallic pyrite containing sulphur, iron and non-ferrous metals, which comprises heating said polymetallic pyrite in a reducing atmosphere at a temperature of 450°–500° C. for 30–60 minutes, thereby causing destruction of the pyrite crystalline lattice with sublimation of sulphur and formation of ferromagnetic pyrrhotine without chemical conversion of the non-ferrous metals, cooling the resulting material, and recovering the iron and non-ferrous metals utilizing magnetic separation with a magnetic field intensity of 1,000 to 2,000 oersted.

4,386,062

INTRADERMAL HORSE SWEAT TEST

Ralph E. Beadle, Baton Rouge, La., assignor to Research Corporation, New York, N.Y.

Filed Jul. 28, 1980, Ser. No. 173,010
Int. Cl.³ A61K *49/00*; G01N *1/00, 33/48*
U.S. Cl. 424—9 **6 Claims**

1. A method for semi-quantitatively determining the susceptibility of a horse, mule, donkey, or zebra to anhidrosis in climates wherein the temperature at night fails to drop below about 23° C., which comprises:

(a) Intradermally administering a series of at least two-fold dilutions of at least one pharmaceutical compound having β-2 stimulator activity and substantially free of β-1 and a α-adrenergic activity to said animal;

(b) Observing the skin over the injection area for the formation of sweat droplets; and

(c) Identifying anhidrosis-susceptible animals having inadequate thermoregulatory responses to hot, humid climates by reduced sweat formation at one or more injection sights.

4,386,063

FLAVOR USE OF MIXTURES CONTAINING 1-N-BUTOXY-1-ETHANOL ACETATE

Richard M. Boden, Monmouth Beach, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 217,810, Dec. 18, 1980, Pat. No. 4,296,138, which is a continuation-in-part of Ser. No. 176,111, Aug. 7, 1980, Pat. No. 4,296,137. This application Aug. 13, 1981, Ser. No. 292,394
The portion of the term of this patent subsequent to Oct. 20, 1998, has been disclaimed.
Int. Cl.³ A23L *1/235*
U.S. Cl. 424—49 **4 Claims**

1. A mixture comprising 1-n-butoxy-1-ethanol acetate and a composition of matter selected from the group consisting of 2-phenyl-3-carboethoxyfuran and bis(cyclohexyl)disulfide, the proportion of 1-n-butoxy-1-ethanol acetate:2-phenyl-3-carboethoxyfuran and/or bis(cyclohexyl)disulfide being from 0.1:1 up to 1:0.1.

4,386,064

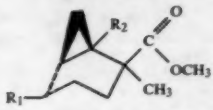
FLAVORING WITH CARBOMETHOXY METHYL NORBORNANES

Philip T. Klemarczyk, Old Bridge; James M. Sanders, Eatontown; Manfred H. Vock, Locust; Joaquin F. Vinals, Red Bank; Frederick L. Schmitt, Holmdel, and Edward J. Granda, Englishtown, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 284,107, Jul. 16, 1981, Pat. No. 4,350,823, which is a continuation-in-part of Ser. No. 133,870, Mar. 25, 1980, Pat. No. 4,319,036. This application May 20, 1982, Ser. No. 380,422
The portion of the term of this patent subsequent to Jan. 26, 1999, has been disclaimed.
Int. Cl.³ A23L *1/235*
U.S. Cl. 424—49 **4 Claims**

1. A process for augmenting or enhancing the blueberry aroma or taste of a consumable material selected from the group consisting of foodstuffs, chewing gums and toothpastes comprising the step of adding to a foodstuff, chewing gum or

toothpaste base, a blueberry aroma or taste augmenting or enhancing quantity of a mixture of two norbornyl derivatives defined according to the structure:



wherein the dashed line represents a carbon-carbon single bond or a carbon-carbon double bond and one of R_1 or R_2 is methyl and the other of R_1 or R_2 is hydrogen, wherein in the mixture, the dashed lines are the same.

4,386,065

VACCINE AGAINST EAE

Donald G. Waldhalm, Caldwell, Id., assignor to Research Corporation, New York, N.Y.

Filed Feb. 11, 1981, Ser. No. 233,572
Int. Cl.³ A61K *39/12*; C12N *7/04*
U.S. Cl. 424—89 **10 Claims**

1. A composition especially adapted for the formulation of a vaccine in unit dosage form for immunization against enzootic abortion in ewes comprising an aqueous suspension containing 10^6 to 10^9 ELD_{50}/0.25 ml of inactivated chlamydial elementary bodies prepared from chlamydial organisms propagated in cell culture.

9. A method for the preparation of a vaccine composition for immunization against enzootic abortion in ewes comprising propagating chlamydial organisms in cell culture, inactivatng said chlamydial organisms to produce inactivated chlamydial elementary bodies and combining from 2×10^6 to 2×10^9 ELD_{50}/ml of said inactivated chlamydial elementary bodies with a parenterally administrable carrier therefor.

4,386,066

IMMUNOGENIC COMPLEX FROM *N. GONORRHOEAE*

Edward C. O'Rourke, West Point, Pa., and W. Wardle Fullerton, La Mesa, Calif., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 20, 1981, Ser. No. 294,855
Int. Cl.³ A61K *39/095*; C12P *21/00*; C12N *1/20*
U.S. Cl. 424—92 **3 Claims**

1. A method of obtaining a vesicular, antigenic, immunogenic, non-pyrogenic complex obtained from strains of *N. gonorrhoeae* characterized by containing on a dry weight basis about 70–90% protein, about 1.5–5.5% total carbohydrate, about 0.45–0.55% ketodeoxyoctanoate, about 1.1–1.6% RNA, about 0–1.5% DNA, about 0.4–3.5% total lipid, about 0.4–0.65% total phosphate and about 1.0–3.5% hexosamines and being characterized on SDS-polyacrylamide gel electrophoresis by sub-unit bands having molecular weights of about 150,000, 115,000, 90,000, 70,000, 45,000, 39,000–35,000, 32,000–22,000 and 20,000–15,000, which comprises cultivating *N. gonorrhoeae* on a suitable nutrient medium, harvesting and centrifuging the cells at 5000×g at 2°–4° C.; extracting the cell pellet with 5% TRITON X-100 in the presence of tris(hydroxymethyl)amino ethane and magnesium chloride at alkaline pH; suspending the solids remaining after extraction in aqueous medium and precipitating with cold ethanol; suspending the ethanol precipitate in physiological saline and incubating with DNase and RNase; removing nucleases and degraduation products by diafiltration; and purifying by sonication and filtration through a 0.45 μm polysulphone filter.

4,386,067

COSMETIC COMPOSITIONS

Claude Guillon, Neuilly sur Seine, France, assignor to Expanscience, Courbevoie, France

Continuation-in-part of Ser. No. 71,600, Aug. 31, 1979, abandoned, which is a continuation of Ser. No. 869,078, Jan. 13, 1978, abandoned, which is a continuation of Ser. No. 783,129, Mar. 31, 1977, abandoned, which is a continuation of Ser. No. 646,092, Jan. 2, 1976, abandoned, which is a continuation of Ser. No. 472,574, May 23, 1974, abandoned, which is a continuation of Ser. No. 13,790, Feb. 24, 1970, abandoned. This application Jul. 25, 1980, Ser. No. 172,118
Claims priority, application France, Apr. 30, 1969, 69 13859
Int. Cl.³ A61K *35/12, 35/407, 47/00, 7/48*
U.S. Cl. 424—95 **7 Claims**

1. A topically appliable cosmetic composition, in the form of a protective cream for dry skins, for creating an increase in the moisture content of human skin consisting essentially of

a cosmetic composition containing the non-saponifiable fraction extracted from soya-bean oil and avocado oil, with the weight ratio of said soya-bean oil non-saponifiable fraction to said avocado oil non-saponifiable fraction being about 2 to 1, and said non-saponifiable fraction being from about 0.2% to 3% by weight based upon the total composition weight, and

the balance of said composition being hexyl laurate and avocado oil.

2. A method for creating an increase in the moisture content of human skin consisting essentially of

topically applying to said skin, in the form of a protective cream of dry skins, an effective amount of a topically appliable cosmetic composition consisting essentially of

a cosmetic composition containing the non-saponifiable fraction extracted from soya-bean oil and avocado oil, with the weight ratio of said soya-bean oil non-saponifiable fraction to said avocado oil non-saponifiable fraction being about 2 to 1, and said non-saponifiable fraction being from about 0.2% to 3% by weight based upon the total composition weight, and

the balance of said composition being a cosmetic carrier suitable for topical application to said human skin.

3. A method for creating an increase in the moisture content of human skin consisting essentially of

topically applying to said skin, in the form of a protective cream for dry skins, an effective amount of a topically appliable cosmetic composition consisting essentially of

a cosmetic composition containing the non-saponifiable fraction extracted from an oil selected from the group consisting of horse mane oil, sweet almond oil, carob bean oil and cod-liver oil, and said non-saponifiable fraction being from about 0.2% to 3% by weight based upon the total composition weight, and

the balance of said composition being a cosmetic carrier suitable for topical application to said human skin.

4,386,068

ANTIHEMOPHILIC FACTOR CONCENTRATE AND METHOD FOR PREPARATION

Gautam Mitra, Kensington, and John L. Lundblad, El Cerrito, both of Calif., assignors to Cutter Laboratories, Inc., Berkeley, Calif.

Filed Feb. 26, 1980, Ser. No. 124,891
Int. Cl.³ A61K *35/14*
U.S. Cl. 424—101 **34 Claims**

1. A process for the production of antihemophilic factor concentrate, comprising the steps of

(a) subjecting an aqueous solution of antihemophilic factor proteins to purification,

(b) subjecting the purified aqueous solution of antihemophilic factor of step (a) to ultrafiltration to remove water, and

(c) mixing the concentrated aqueous solution of antihemophilic factor of step (b) with buffer and saline.

4,386,069

ADDITIVE SOLUTION AND METHOD FOR PRESERVING NORMAL RED CELL MORPHOLOGY IN WHOLE BLOOD DURING STORAGE

Timothy N. Estep, Lindenhurst, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Dec. 2, 1981, Ser. No. 326,771
Int. Cl.³ A61K 35/14
U.S. Cl. 424—101 30 Claims

1. An additive solution for preserving normal red blood cell morphology during whole blood storage, said solution comprising

a fatty ester including at least two ester linkages comprising fatty hydrocarbon groups of about four to twelve carbon atoms each, said fatty ester being present in a concentration of between 150 and 3,000 micrograms per milliliter of whole blood.

4,386,070

PHARMACEUTICAL COMPOSITIONS ENDOWED WITH AN ANTIBACTERIAL ACTIVITY AND THEIR USE IN THE TREATMENT OF INFECTIONS DUE TO GRAM-POSITIVE AND GRAM-NEGATIVE PATHOGENS

Leonardo De Vincentiis, Rome, Italy, assignor to Ausonia Farmaceutici S.R.L., Pomezia-Rome, Italy

Continuation-in-part of Ser. No. 84,539, Oct. 15, 1979, abandoned. This application Feb. 27, 1981, Ser. No. 238,811
Claims priority, application Italy, Oct. 20, 1978, 28934 A/78; Sep. 25, 1979, 25973 A/79
Int. Cl.³ A61K 35/00, 31/54, 31/435, 31/70
U.S. Cl. 424—114 2 Claims

1. The method of treatment of bacterial infections of human beings, due to both Gram-positive and Gram-negative pathogens, which consists of orally administering to said human being a tablet or capsule containing 500–1000 mgs. of an association of a bacterial antibiotic which is cephalexin or pivcephalexin and a β-ketoacid which is nalidixic acid in the ratio of 1:1.

4,386,071

INSECTICIDAL NATURAL BAIT COMPOSITION AND METHOD OF USING SAME

Arthur Carle, 3390 rue Simard, St-Hubert, Quebec, Canada (J3Y 6T4)

Continuation-in-part of Ser. No. 57,436, Jul. 13, 1979, Pat. No. 4,279,895. This application Jul. 13, 1981, Ser. No. 282,381
The portion of the term of this patent subsequent to Jul. 21, 1998, has been disclaimed.
Int. Cl.³ A01N 59/00
U.S. Cl. 424—127 14 Claims

1. An insecticidal natural bait comprising

(a) between about 75 and about 95 percent by weight of humidified diatomaceous silica having a particle size of at most 50 microns;

(b) between about 5 and about 25 percent by weight of sugar or a sugar substitute;

(c) said composition being humidified to contain about 1 to about 25 percent by weight water to enable it to be swallowed by an insect and to prevent said sugar or sugar substitute from being washed away from said composition.

14. An insecticidal method which comprises contacting insects with a composition as defined in claim 1.

4,386,072

TREATMENT OF DISORDERS OF INFLAMMATION AND IMMUNITY AND DISORDERS ASSOCIATED WITH SMOOTH MUSCLE SPASM AND COMPOSITIONS THEREFOR

David F. Horrobin, P.O. Box 10, Nuns' Island, Montreal, Canada (H3E 1J8), and Julian Lieb, 41 Village La., Bethany, Conn. 06525

Continuation-in-part of Ser. No. 277,671, Jun. 26, 1981, abandoned. This application Feb. 3, 1982, Ser. No. 345,214
Int. Cl.³ A61K 33/00, 33/12, 31/20
U.S. Cl. 424—127 4 Claims

1. A method for the treatment and/or prophylaxis of disorders of inflammation and immunity and disorders associated with smooth muscle spasm in a subject, which method comprises administering to the subject an effective amount therefor of dihomo-γ-linolenic acid, γ-linolenic acid or linoleic acid conjointly with a physiologically acceptable lithium salt.

4,386,073

TRIPEPTIDES ACTING ON THE CENTRAL NERVOUS SYSTEM AND A PROCESS FOR THE PREPARATION THEREOF

Lajos Kisfaludy; Tamas Szirtes, both of Budapest; Lajos Balaspiri, Szeged; Eva Palosi, Budapest; Laszlo Szporny, Budapest, and Adam Sarkadi, Budapest, all of Hungary, assignors to Patentbureau DANUBIA, Budapest, Hungary

Filed Jun. 27, 1980, Ser. No. 163,830
Claims priority, application Hungary, Jun. 28, 1979, RI 718
The portion of the term of this patent subsequent to Nov. 10, 1998, has been disclaimed.
Int. Cl.³ A61K 37/00; C07C 103/52
U.S. Cl. 424—177 11 Claims

1. A peptide of the general formula (I)

$$X—Y—W—NH_2 \quad (I)$$

wherein

X is a L-pyroglutamyl, D-pyroglutamyl, L-2-ketoimidazolidine-4-carbonyl, L-6-keto-pipecolyl, L-thiazolidine-4-carbonyl, L-prolyl or orotyl group,

Y is L-leucyl or L-norvalyl and

W is a D-prolyl, L-thiazolidine-4-carbonyl, L-homoprolyl, L-leucyl, L-isoleucyl, L-methionyl, L-pipecolyl or D-pipecolyl group, or

the W-NH_2 group stands for a pyrrolidyl or piperidyl group, or a pharmaceutically acceptable complex thereof.

4,386,074

LRF ANTAGONISTS

Wylie W. Vale, Jr., and Jean E. F. Rivier, both of La Jolla, Calif., assignors to The Salk Institute for Biological Studies, San Diego, Calif.

Continuation-in-part of Ser. No. 182,594, Aug. 29, 1980, abandoned. This application Jul. 27, 1981, Ser. No. 287,189
The portion of the term of this patent subsequent to Sep. 29, 1998, has been disclaimed.
Int. Cl.³ A61K 37/00; C07C 103/52
U.S. Cl. 424—177 20 Claims

1. A peptide or a nontoxic salt thereof, said peptide having the formula:

R_1-dehydro Pro-R_2-D-Trp-Ser-Tyr-D-Trp-Leu-Arg-Pro-Gly-NH_2

wherein R_1 is selected from the group consisting of hydrogen, formyl, acetyl, acrylyl, benzoyl and allyl; R_2 is selected from the group consisting of dichloro-D-Phe, CF_3-D-Phe, F-D-Phe, difluoro-D-Phe, AcNH-D-Phe, NO_2-D-Phe, dinitro-D-Phe, Br-D-Phe, dibromo-D-Phe, C^{α} Me4Cl-D-Phe, $(CH_3)_5$-D-Phe, CH_3S-D-Phe, OCH_3-D-Phe and CH_3-D-Phe; wherein any D-isomer amino acid may be substituted for D-Trp and in the 6-position; and wherein N^{α}MeLeu may be substituted for Leu.

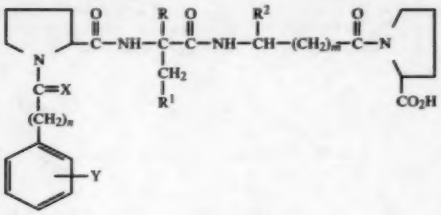
4,386,075

RENALLY ACTIVE TETRAPEPTIDES

Francis R. Pfeiffer, Cinnaminson, N.J., assignor to SmithKline Beckman Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 349,448, Feb. 17, 1982. This application Mar. 19, 1982, Ser. No. 359,958
Int. Cl.³ A61K *37/00*
U.S. Cl. 424—177 12 Claims

1. A chemical compound of the structural formula:



in which:

R is hydrogen or lower alkyl of 1–3 carbons;

R^1 is hydrogen, phenyl or phenyl optionally substituted by 1 or 2 hydroxy or methoxy groups;

R^2 is hydrogen, lower alkyl of 1–3 carbons, phenyl or phenyl optionally substituted by 1 or 2 hydroxy or methoxy groups;

Y is hydrogen, hydroxy or methoxy;

X is O or H,H; and

n and m are each integers of from 0–4; or pharmaceutically acceptable acid addition or alkali metal salts thereof.

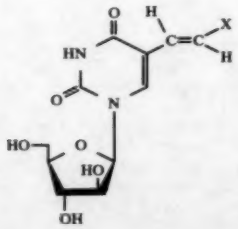
4,386,076

(E)-5-(2-HALOGENOVINYL)-ARABINOFURANOSYLURACIL, PROCESS FOR PREPARATION THEREOF, AND USES THEREOF

Haruhiko Machida, and Shinji Sakata, both of Choshi, Japan, assignors to Yamasa Shoyu Kabushiki Kaisha, Chiba, Japan

Filed Dec. 12, 1980, Ser. No. 215,928
Claims priority, application Japan, Dec. 19, 1979, 54-164025
Int. Cl.³ A61K *31/70*; C07H *19/06*
U.S. Cl. 424—180 6 Claims

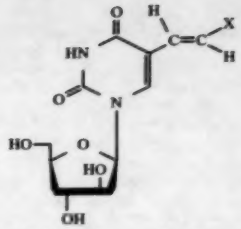
1. An (E)-5-(2-halogenovinyl)-arabinofuranosyluracil represented by the formula [I],



[I]

wherein X stands for a halogen.

5. An anti-DNA virus agent comprising as the effective component an effective quantity of a compound represented by the formula [I],



[I]

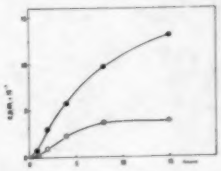
wherein X stands for a halogen and a pharmaceutically acceptable carrier.

4,386,077

PHARMACEUTICAL COMPOSITION FOR ORAL ADMINISTRATION CONTAINING CYTIDINE DIPHOSPHOCHOLINE

Eraldo Borgo, Ficarazzi di Catania, Italy, assignor to Made Italiana s.r.l, Rome, Italy

Filed Apr. 27, 1981, Ser. No. 257,538
Int. Cl.³ A61K *31/70*
U.S. Cl. 424—180 3 Claims



1. A pharmaceutical composition for the treatment of consciousness impairment in an animal, cerebral thrombosis, cerebropathies ascribable to atherosclerosis, in a form suitable for oral administration, containing CDP-choline or a salt thereof in association with a material containing phospholipids, in the ratio of 1:20–1:0.5% weight by weight, in unit dosage form containing 200 mg up to 400 mg of said CDP-choline or salt thereof per kilogram of body weight of said animal.

2. The method of preparing an association of CDP-choline or a salt thereof with phospholipids which consists of mixing an aqueous solution of CDP-choline or a salt thereof with phospholipids in the solid state or in an emulsion or as a solution in the ratio of 1:20–1:0.5% weight by weight and isolating said association product from the mixture.

3. A pharmaceutical composition according to claim 1, which additionally contains an edible protein in the amount of 5% based on the weight of said CDP-choline or salt thereof and a cross-linking agent in the amount of 5% based on the weight of said CDP-choline or salt thereof.

4,386,078

THERAPEUTIC AGENTS FOR PREVENTING PHOSPHOLIPID DEGRADATION AND FREE FATTY ACID PROLIFERATION

Lloyd A. Horrocks; Robert V. Dorman, both of Columbus, Ohio, and Zbigniew M. Dabrowiecki, Warsaw, Poland, assignors to The Ohio State University Research Foundation, Columbus, Ohio

Continuation-in-part of Ser. No. 126,526, Mar. 3, 1980, abandoned. This application Sep. 18, 1981, Ser. No. 303,505
Int. Cl.³ A61K *31/70*
U.S. Cl. 424—180 18 Claims

1. A method for substantially maintaining glycerophospholipid production by a mammalian cell and for suppressing consequent free fatty acid proliferation in said cell, said cell being susceptible to injury or disease to said mammal which causes normal glycerophospholipid production by said cell to become retarded, which method comprises: presenting said

cell with a pharmaceutically effective proportion of a therapeutic agent selected from the group consisting of cytidine diphosphoethanolamine, cytidine diphospho-N-methylethanolamine, cytidine diphospho-N,N-dimethylethanolamine, mixtures thereof, and mixtures of at least one of said cytidine compounds with cytidine diphosphocholine.

16. A therapeutic agent for preventing phospholipid degradation and free fatty acid proliferation, said therapeutic agent comprising a substantially isotonic injectable solution containing a therapeutically effective amount of a mixture of cytidine diphosphocholine and at least one cytidine compound selected from the group consisting of cytidine diphosphoethanolamine, cytidine diphospho-N-methylethanolamine and cytidine diphospho-N,N-dimethylethanolamine.

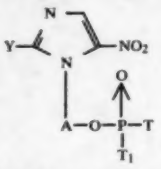
4,386,079

METHOD OF TREATING DEPRESSION

Robert A. Lahti, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

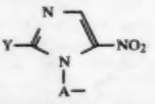
Filed Nov. 23, 1981, Ser. No. 324,187
Int. Cl.³ A61K *31/675*
U.S. Cl. 424—200 **3 Claims**

1. A method of treating depression in humans which comprises administering orally to said humans an antidepressant effective amount of a compound having the formula:



I₁

wherein Y is alkyl of from 1 to 3 carbons, inclusive; A is ethylene or $-CH_2CH(CH_2Cl)-$, T and T_1 are the same or different and are SR_3, OR or NR_1R_2; R is hydrogen, alkyl of from 1 through 6 carbons, aryl, aralkyl or



I(a)

with the proviso that when one of T or T_1 is NR_1R_2 then the other cannot be SR_3 or OR.

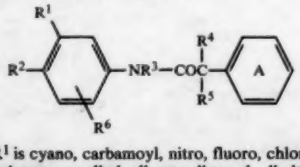
4,386,080

ANTI-ANDROGENIC AMIDE DERIVATIVE

Neville S. Crossley, Knutsford; Alasdair T. Glen, and Leslie R. Hughes, both of Macclesfield, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed May 21, 1981, Ser. No. 266,047
Claims priority, application United Kingdom, May 22, 1980, 8016915
Int. Cl.³ C07C *103/22, 103/26*
U.S. Cl. 424—209 **9 Claims**

1. An acylanilide of the formula:

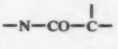


wherein R^1 is cyano, carbamoyl, nitro, fluoro, chloro, bromo, iodo or hydrogen, or alkyl, alkoxy, alkanoyl, alkylthio, alkylsulphinyl, alkylsulphonyl, perfluoroalkyl, perfluoroalkylthio, perfluoroalkylsulphinyl or perfluoroalkylsulphonyl each of up to 4 carbon atoms, or phenylthio, phenylsulphinyl or phenylsulphonyl; wherein R^2 is cyano, carbamoyl, nitro, fluoro, chloro, bromo or iodo, or alkanoyl, alkylthio, alkylsulphinyl, alkylsulphonyl, perfluoroalkyl, perfluoroalkylthio, perfluoroalkylsulphinyl or perfluoroalkylsulphonyl each of up to 4 carbon atoms, or phenylthio, phenylsulphinyl or phenylsulphonyl;

wherein R^3 is hydrogen or alkyl of up to 4 carbon atoms, or is joined to R^5 as stated below;

wherein R^4 is alkyl of 2 to 4 carbon atoms, or has the formula $-CX^1X^2X^3$ wherein X^1, X^2 and X^3, which may be the same or different, each is hydrogen, fluorine or chlorine;

wherein R^5 is hydrogen, hydroxy or alkoxy or acyloxy each of up to 15 carbon atoms, or is joined to R^3 to form an oxycarbonyl group such that together with the



part of the molecule it forms an oxazolidinedione group;

wherein R^6 is hydrogen or halogen;

and wherein the benzene ring A bears one, two or three substituents selected from halogen, nitro, carboxy, carbamoyl and cyano, and alkanoyl, alkylthio, alkylsulphinyl, alkylsulphonyl, perfluoroalkyl, perfluoroalkylthio, perfluoroalkylsulphinyl, perfluoroalkylsulphonyl, alkoxycarbonyl and N-alkylcarbamoyl each of up to 4 carbon atoms, and phenylthio, phenylsulphinyl and phenylsulphonyl.

9. A method of producing an antiandrogenic effect in a warm-blooded animal in need of such an effect which comprises administering to said animal an effective amount of an acylanilide claimed in any of claims 1 to 6.

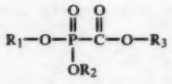
4,386,081

PHOSPHONOFORMIC ACID ESTERS AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAME

Ake J. E. Helgstrand; Karl N. Johansson, both of Enhörna; Alfons Misiorny, Bandhagen; Jan O. Noren, Grödinge, and Göran B. Stening, Södertälje, all of Sweden, assignors to Astra Läkemedel Aktiebolag, Södertälje, Sweden

Continuation-in-part of Ser. No. 971,896, Dec. 21, 1978, abandoned. This application Nov. 13, 1979, Ser. No. 93,167
Claims priority, application United Kingdom, Dec. 22, 1977, 53580/77; Dec. 22, 1977, 53581/77; Dec. 22, 1977, 53582/77; Dec. 22, 1977, 53583/77; Jul. 3, 1978, 28548/78; Jul. 3, 1978, 28552/78; Jul. 3, 1978, 28553/78; Jul. 3, 1978, 28555/78
Int. Cl.³ A61K *31/66*; C07F *9/40*
U.S. Cl. 424—212 **10 Claims**

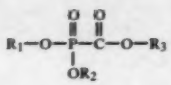
1. A compound of the formula



(I)

or a physiologically acceptable salt or an optical isomer thereof, wherein R_1 is selected from the group consisting of hydrogen, alkyl containing 1–6 carbon atoms, cycloalkyl containing 3–6 carbon atoms, cycloalkyl-alkyl containing 4–6 carbon atoms, 1-adamantyl, 2-adamantyl and benzyl; R_2 is hydrogen and R_3 is selected from the group consisting of hydrogen and benzyl, provided that when R_3 is H, then R_1 is alkyl, cycloalkyl, cycloalkyl-alkyl as defined above, or 1-adamantyl, 2-adamantyl or benzyl, or a physiological acceptable salt or an optical isomer thereof.

6. A pharmaceutical preparation comprising an active ingredient in an amount effective to treat a virus infection in an animal or man, together with a physiologically acceptable carrier, said active ingredient being a compound of the formula



(I)

wherein R_1 is selected from the group consisting of hydrogen, alkyl containing 1–6 carbon atoms, cycloalkyl containing 3–6 carbon atoms, cycloalkyl-alkyl containing 4–6 carbon atoms, 1-adamantyl, 2-adamantyl and benzyl; R_2 is hydrogen and R_3 is selected from the group containing hydrogen and benzyl, provided that when R_3 is H, then R_1 is alkyl, cycloalkyl or cycloalkyl-alkyl as defined above, or 1-adamantyl, 2-adamantyl or benzyl, or a physiological acceptable salt or an optical isomer thereof.

4,386,082

PESTICIDALLY ACTIVE PHOSPHORIC (PHOSPHONIC) ACID ESTER AMIDES

Dieter Arlt, Cologne; Bernhard Homeyer, Leverkusen; Ingeborg Hammann, Cologne, and Volker Paul, Solingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

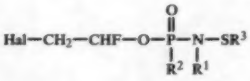
Filed Feb. 26, 1982, Ser. No. 352,687

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1981, 3110595

Int. Cl.³ A01N *57/28;* **C07F** *9/24*

U.S. Cl. 424—215 **13 Claims**

1. A phosphoric (phosphonic) acid ester amide of the formula



in which

R^1 is a hydrogen atom or an optionally substituted alkyl radical,

R^2 is an optionally substituted alkyl or optionally substituted alkoxy radical,

R^3 is an optionally substituted alkyl or optionally substituted aryl radical, and

Hal is a halogen atom.

2. A method of combating pests or microbes comprising applying to the pests or microbes or to a habitat thereof, a pesticidally or microbicidally effective amount of a compound according to claim 1.

4,386,083

INJECTABLE OXYTETRACYCLINE COMPOSITIONS

Walter Hacke, Rutherford, N.J., and Herman Horn, Staten Island, N.Y.

Continuation-in-part of Ser. No. 139,147, Apr. 10, 1980, abandoned. This application Sep. 17, 1981, Ser. No. 303,003

Int. Cl.³ A61K *31/65*

U.S. Cl. 424—227 **11 Claims**

1. A stable, injectable antibiotic composition of increased antibiotic concentration for parenteral administration comprising:

(a) from greater than about 15 to about 35 parts by weight of an antibiotic selected from the group consisting of oxytetracycline base and an acid addition salt thereof,

(b) a magnesium compound selected from the group consisting of magnesium acetate and magnesium chloride present in a molar ratio from about 0.8 to about 1.2 moles per mole of said antibiotic, with the proviso that magnesium chloride is used only with oxytetracycline base,

(c) from about 50 to about 95 parts by weight of glycerol formal selected from the group consisting of 4-hydroxymethyl-1,3-dioxolane, 5-hydroxy-1,3-dioxane and mixtures thereof,

(d) from about 10 to about 45 parts by weight of water,

(e) an antioxidant in an amount sufficient to stabilize said composition, and

(f) a buffering agent in an amount sufficient to provide a pH of from about 6 to about 9.5 in said composition.

4,386,084

N-PYRIMIDINYL-CARBAMIC ACID ESTERS, THEIR PREPARATION, AND DRUGS CONTAINING THESE COMPOUNDS

Peter Scharwaechter, Moorrege; Klaus Gutsche, Rellingen; Friedrich-Wilhelm Kohlmann, Moorrege, and Hinrich Beck, Bad Bramstedt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

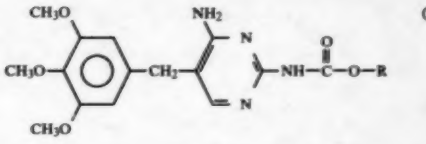
Filed Nov. 18, 1981, Ser. No. 322,670

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1980, 3045720

Int. Cl.³ C07D *239/49;* **A61K** *31/625, 31/505*

U.S. Cl. 424—229 **9 Claims**

1. An N-pyrimidinyl-carbamic acid ester of the general formula I



(I)

where R is alkyl of 1 to 4 carbon atoms which can be substituted by phenyl, or by alkoxy of 1 to 3 C atoms which is at least 2 carbon atoms removed from the carbamic acid ester oxygen, and pharmacologically tolerated salts thereof.

5. An anbibacterial pharmaceutical formulation which comprises: an effective amount of a compound of the formula I as defined in claim 1, or a pharmacologically tolerated salt thereof, and a non-toxic, therapeutically tolerated solid or liquid carrier.

4,386,085

NOVEL STEROIDS

Jean G. Teutsch, Pantin; Germain Costerousse, Saint-Maurice; Daniel Philibert, La Varenne Saint Hilaire, and Roger Deraedt, Pavillons sous Bois, all of France, assignors to Roussel Uclaf, Paris, France

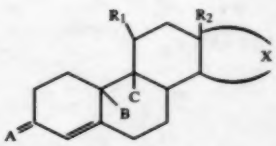
Filed Jan. 8, 1982, Ser. No. 338,077

Claims priority, application France, Jan. 9, 1981, 81 00272

Int. Cl.³ A01N *45/00;* **A61K** *31/56*

U.S. Cl. 424—238 **46 Claims**

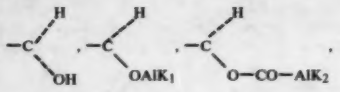
1. A compound selected form the group consisting of 19-nor steroids and 19-nor-D-homo-steroids of the formula



I'

wherein R_1 is an organic radical of 1 to 18 carbon atoms containing at least one atom selected from the group consisting of nitrogen, phosphorous and silicon with the atom immediately adjacent to the 11-carbon atom being carbon, R_2 is a hydrocarbon of 1 to 8 carbon atoms, X is selected from the group consisting of a pentagonal ring and a hexagonal ring optionally substituted and optionally containing a double bond, B and C

together form a double bond or an epoxy group, the C=A group at position 3 is selected from the group consisting of C=O, ketal,



—C=NOH, —C=NOAlK$_3$ and =CH$_2$, AlK$_1$, AlK$_2$ and AlK$_3$ are selected from the group consisting of alkyl of 1 to 8 carbon atoms and aralkyl of 7 to 15 carbon atoms and their non-toxic, pharmaceutically acceptable acid addition salts.

20. An antiglucocorticoid composition comprising an antiglucocorticoidally effective amount of at least one compound of claim 1 and an inert carrier.

4,386,086

METHOD FOR CONTROLLING ECTOPARASITIC ACARINA

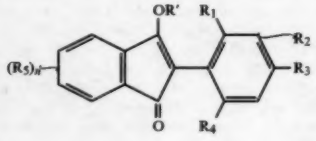
David T. Manning, Charleston, and John A. Durden, South Charleston, both of W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Aug. 24, 1978, Ser. No. 936,396

Int. Cl.^{3} A01N *35/00, 37/34, 43/40, 43/80*

U.S. Cl. 424—244 **3 Claims**

1. A method of controlling ectoparasitc Acarina selected from the group consisting of Demodicidae, Sarcoptidae and Psorptidae that bore into and through the dermal integument of warmblooded animals which comprises orally administering to a said animal a said Acarina ectoparasitically effective amount of a compound of the formula:



wherein:

R$_1$ is hydrogen, methyl, ethyl, methoxy, ethoxy, fluoro, chloro, bromo, trichloromethyl, trifluoromethyl, or mixed chlorofluoromethyl;

R$_2$ is hydrogen, lower alkyl, lower haloalkyl, lower alkoxy, acylamido, fluoro, chloro or bromo;

R$_3$ is hydrogen, lower alkyl, lower alkoxy, fluoro, chloro, bromo, nitro, acylamido, trichloromethyl, trifluoromethyl or mixed chlorofluoromethyl;

R$_4$ is methyl, ethyl, methoxy, ethoxy, fluoro, chloro, or bromo;

R$_1$ and R$_2$ or R$_4$ and R$_2$ may together form a —CH=CH—CH=CH—chain, and when R$_4$ is ethyl, methoxy or ethoxy; R$_1$, R$_2$ and R$_3$ may not all be hydrogen;

n is a small whole number from 1 to 4;

R$_5$ is hydrogen, lower alkyl, lower alkoxy, fluoro, chloro, bromo, trifluoromethyl, trichloromethyl, mixed chlorofluoromethyl or acylamido;

R′ is hydrogen or

wherein

R$_6$ is hydrogen, halogen or an unsubstituted or substituted organic radical selected from the group consisting of alkyl, alkenyl, alkynyl, cycloalkyl, cycloalkenyl, bicycloalkyl, bicycloalkenyl, alkylthioalkyl, alkylsulfinylalkyl, alkylsulfonylalkyl, alkoxyalkyl, alkoxycarbonylalkyl, arylalkyl, aryloxyalkyl, arylthioalkyl, aryl, alkylaryl, alkoxyaryl, arylsulfinylalkyl, alkoxy, alkylthio, aryloxy, arylthio, arylsulfonyl, alkyl, heterocyclic, acylamido, alkylcarbamoyloxy or amino radicals of the formula:

wherein:

R$_7$ is hydrogen, alkyl, alkenyl, alkynyl, cycloalkyl, or aryl and R$_8$ is alkyl, alkenyl, alkynyl, cycloalkyl or aryl or R$_7$ and R$_8$ together may form a lower alkylene or lower dialkylene ether linkage, wherein the permissible substituents are one or more halo, nitro or cyano groups.

4,386,087

N-SUBSTITUTED METALLOPORPHYRINS AS ANTI-TUMOR AGENTS AGAINST PS-P-388(P388) LEUKEMIA IN ANIMALS

David K. Lavallee, New York, N.Y., assignor to Research Foundation of the City University of New York, New York, N.Y.

Filed Jul. 1, 1981, Ser. No. 279,422

Int. Cl.^{3} A61K *31/555*

U.S. Cl. 424—245 **1 Claim**

1. The method of treating lymphocytic PS-P-388 leukemia in a mammal comprising the injection by injection of to said mammal of, sodium aquo-N-methyltetra(p-sulfophenyl)porphinato copper (II) trifluoromethane sulfonate in a daily dose rate of 6–100 mg/kilogram of body weight.

4,386,088

COMBATING FUNGI WITH α-AZOLYL-KETO DERIVATIVES

Eckart Kranz; Wolfgang Krämer; Karl H. Büchel, all of Wuppertal; Wilhelm Brandes, Leichlingen, and Paul-Ernst Frohberger, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 54,067, Jul. 2, 1979, Pat. No. 4,316,932.

This application Sep. 21, 1981, Ser. No. 304,128

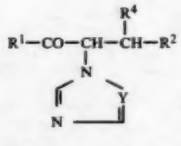
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1978, 2832234

The portion of the term of this patent subsequent to Sep. 22, 1998, has been disclaimed.

Int. Cl.^{3} A01N *43/50, 43/82;* **C07D** *233/60, 249/08*

U.S. Cl. 424—245 **9 Claims**

1. An α-azolyl-keto derivative of the formula



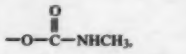
in which

R^1 represents C$_{1-4}$-alkyl; C$_{1-4}$-alkyl substituted by at least one substituent selected from the group consisting of halogen, C$_{1-4}$-alkylcarbonyloxy, optionally substituted phenylcarbonyloxy, C$_{1-4}$-alkyl- or dialkyl-carbamoyloxy, C$_{1-4}$-alkylsulphonyloxy, optionally substituted phenylsulphonyloxy, C$_{1-4}$-dialkylaminosulphonyloxy, C$_{1-4}$-alkoxy and optionally substituted phenoxy wherein aforementioned optional substituents are selected from the group consisting of halogen, cyano, nitro, C$_{1-4}$-alkyl, C$_{5-7}$-cycloalkyl, halogenomethyl, halogenoethyl, and phenyl, phenoxy or benzyl, the last three radicals optionally being substituted by halogen, cyano or nitro;

R^2 represents the grouping -CX^{1}X^{2}R^3 or C$_{1-4}$-alkoxycarbonyl;

R^3 represents halogen, halogeno-C_{1-4}-alkyl, phenyl, halogenophenyl, methylphenyl, ethylphenyl, halogenomethylphenyl, halogenoethylphenyl, cyanophenyl or nitrophenyl;

R^4 represents the grouping -O-R^6,-S-R^6,-O-SO-R^7,



halogen, C_{1-4}-alkyl- or dialkyl-amino, phenylamino, halogenophenylamino, cyanophenylamino, nitrophenylamino, methylphenylamino or ethylphenylamino

R^6 represents C_{1-4}-alkyl, C_{2-4}-alkenyl or alkynyl, C_{3-7}-cycloalkyl, phenyl, benzyl, phenyl or benzyl substituted with halogen, nitro, cyano, C_{1-4}-alkyl, methoxy, ethoxy, methylthio, ethylthio, halogenomethyl or halogenoethyl;

R^7 represents C_{1-4}-alkyl, C_{1-4}-dialkylamino, phenyl, phenyl substituted by chlorine, bromine or methyl, or halogeno-C_{1-4}-alkyl with up to 5 halogen atoms;

X^1 and X^2 each independently represents hydrogen, fluorine chlorine or bromine; and

Y is a nitrogen atom or the CH group;

or an addition salt thereof with an acid selected from the group consisting of a hydrogen-halide acid, phosphoric acid, nitric acid, sulphuric acid a carboxylic acid and a sulphonic acid, or a metal salt complex thereof, the metal of the salt being selected from main groups II to IV and sub-groups I, II and IV to VIII of the Periodic Table and the anion of the salt being derived from a hydrogen halide acid, sulphuric acid, nitric acid or phosphoric acid.

8. A method of combating fungi which comprises applying to the fungi, or to a habitat thereof, a fungicidally effective amount of a compound according to claim 1.

4,386,089

β-LACTAM ANTIBIOTICS AND THEIR MEDICINAL USE

Hans-Bodo Konig; Karl G. Metzger, and Michael Preiss, all of Wuppertal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

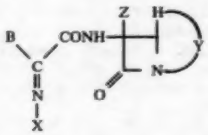
Continuation of Ser. No. 33,300, Apr. 25, 1979, abandoned. This application Jun. 24, 1981, Ser. No. 276,762

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1978, 2818263

Int. Cl.³ A61K *31/43, 31/545*

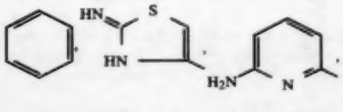
U.S. Cl. 424—246 **16 Claims**

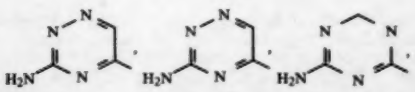
1. A β-lactam of the formula



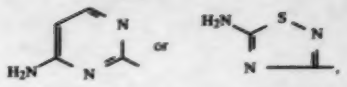
in which

B is

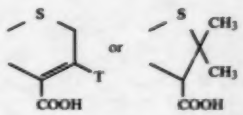




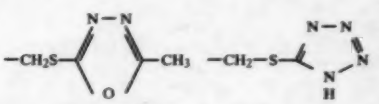
-continued

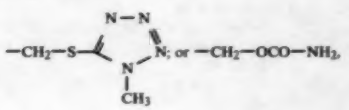


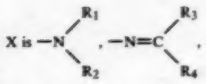
Z is a hydrogen atom or a C_1 to C_4 alkoxy group, Y is

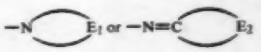


T is $-CH_2-O-CO-CH_3$, $-CH_2-S-$ $-CH_3$,

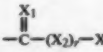








R_1, R_2, R_3 and R_4 each independently is a hydrogen atom; an alkyl, alkenyl or alkinyl radical with up to 4 carbon atoms; an alkadienyl, cycloalkenyl or cycloalkadienyl radical with up to 7 carbon atoms; a cycloalkyl radical with up to 6 carbon atoms; phenyl; or



X_1 and X_2 each independently is O, S or N—X_3,

X_3 is an alkyl or alkenyl radical with up to 4 carbon atoms; a cycloalkyl radical with up to 7 carbon atoms; phenyl; C_{1-4}-alkylphenyl; C_{1-4}-alkoxyphenyl; halophenyl; thienyl; thiazolyl; pyridyl; pyrrolidin-2-on-1-yl; imidazolidin-2-on-1-yl; piperazine-2,3-dion-1-yl; 1-furylidene amino-2-oxy-imidazolidin 1-yl; or $-SO_2-X_4$;

r is 0 or 1;

X_4 is C_{1-4}-alkyl, phenyl, NH_2, mono- or di-alkylamino or hydroxyl;

E_1 is $-(CO)_m-(NR_9)_m-(CH_2)_n-$, $-(CH_2)_m-R_1-O-(CH_2)_m-$, $-(CO)_m-(CH_2)_p-$, $-(CO)_2-_m-(CH_2)_n-(CO)_m-$, $-CO-CH=CH-CO-$, $-CO-O-(CH_2)_q-$, $-CO-S-(CH_2)_q-$, $-CO-NR_9-CO-(CH_2)_m-$, $-SO_2-(CH_2)_p-$, $-CO-(CH_2)_q-SO_2-$, $-CO-NR_9-N=CH-$, $-(CH=CH)_2-$, $-CO-NH-N=CH-CO-$ or $-CO-(CH=CH)_2-$;

R_9 has any of the meanings given for R_1 or is

R_{10} is O, S, SO, SO_2 or NR_{11},

R_{11} is a hydrogen, methyl, ethyl, cyclopropyl, methylsulphonyl or furylideneamino radical,

m is 1 or 2,

n is 2 or 3,

p is 3, 4 or 5,

q is 2, 3 or 4, and

E_2 together with the carbon atom forms a 4- to 7-membered carbocyclic ring or heterocyclic ring containing 1 or 2 oxygen, sulfur or nitrogen atoms as hetero-atoms.

10. A pharmaceutical composition containing an antibacterially effective amount of a compound according to claim **1**, in admixture with a liquid diluent other than a solvent of a molecular weight less than 200 except in the presence of a surface-active agent.

4,386,090

NITROGEN CONTAINING 2,3-DIHYDRO NAPHTHALENES, COMPOSITIONS AND USE

Gerard H. Moinet, Orsay; Philippe L. Dostert, Paris, and Guy R. Bourgery, Colombes, all of France, assignors to Delalande S.A., Courbevoie, France

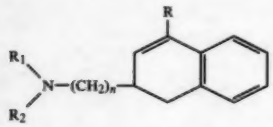
Filed Dec. 16, 1981, Ser. No. 331,484

Claims priority, application France, Dec. 22, 1980, 80 27252; Dec. 14, 1981, 81 23304

Int. Cl.[3] **C07D** *295/02, 295/06;* **A61K** *31/535, 31/135*

U.S. Cl. 424—248.4 **9 Claims**

1. A compound having the formula



wherein n is 1, 2 or 3, R is phenyl or ortho-fluorophenyl,

is amino, methylamino, dialkylamino in which the alkyls have from 1 to 4 carbon atoms, pyrrolidino, piperidino, morpholino or 4-methyl piperazino, and pharmaceutically acceptable acid addition salts there¬f.

8. A pharmaceutical composition comprising a therapeutically effective amount of a compound as claimed in claim **1** and a pharmaceutically acceptable carrier.

9. A method for treating a patient suffering from pain or depression which comprises administering to that patient a pharmaceutical composition as claimed in claim **8**.

4,386,091

2-PHENOXYALKYL-1,2,4-TRIAZOL-3-ONE ANTIDEPRESSANTS

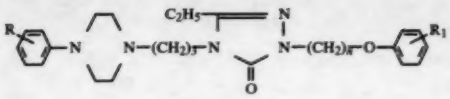
Davis L. Temple, Jr., and Walter G. Lobeck, Jr., both of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Filed Feb. 24, 1982, Ser. No. 351,833

Int. Cl.[3] **A61K** *31/495;* **C07D** *249/08, 295/00*

U.S. Cl. 424—250 **7 Claims**

1. A compound of Formula I



wherein R_1 is hydrogen, halogen or alkoxy of 1–4 carbon atoms, n is 2–4, R is halogen or a pharmaceutically acceptable acid addition salt thereof.

4,386,092

HETEROCYCLIC-SUBSTITUTED OXOALKANOIC ACID DERIVATIVES

Takanori Oe, Nakatsu; Minoru Moriwaki, Fukuoka; Kazuhiro Goto, and Masao Hisadome, both of Nakatsu, all of Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

PCT No. PCT/JP81/00007, § 371 Date Aug. 28, 1981, § 102(e) Date Aug. 28, 1981, PCT Pub. No. WO81/02013, PCT Pub. Date Jul. 23, 1981

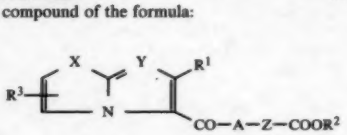
PCT Filed Jan. 13, 1981, Ser. No. 297,696

Claims priority, application Japan, Jan. 16, 1980, 55-4012

Int. Cl.[3] **A61K** *31/425, 31/435;* **C07D** *471/04, 513/04*

U.S. Cl. 424—256 **10 Claims**

1. A compound of the formula:



wherein R^1 is hydrogen, lower alkyl, phenyl which may be substituted by at least one substituent selected from halogen, lower alkyl, lower alkoxy, mono- or di-lower alkyl amino-substituted lower alkoxy, lower alkylthio, lower alkylsulfinyl, amino, nitro and cyano at any position(s) on the nucleus, thienyl or furyl, each of R^2 and R^3 is hydrogen or lower alkyl, A is lower alkylene, X is sulfur or vinylene, Y is nitrogen or methine which may be substituted by lower alkyl, and Z is carbonyl or direct bond.

10. A pharmaceutical composition having immunomodulatory activity comprising an immunomodulatorily effective amount of a compound of claim **1** in combination with a pharmaceutically acceptable carrier.

4,386,093

(±)3-DEAZAARISTEROMYCIN AND USES

Peter K. Chiang, Kensington; Giulio L. Cantoni, Bethesda, both of Md., and John A. Montgomery, Birmingham, Ala., assignors to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Filed Sep. 16, 1981, Ser. No. 302,557

Int. Cl.[3] **A61K** *31/435;* **C07D** *471/04*

U.S. Cl. 424—256 **8 Claims**

1. A method of alleviating the effects of herpes simplex type I by utilization of an effective concentration for the inhibition of herpes simplex I in tissue culture of (±)-3-deazaaristeromycin.

2. A method of alleviating the effects of HL-23 C type virus by utilization of an effective concentration for the inhibition of HL-23 type virus in tissue culture of (±)-3-deazaaristeromycin.

3. A method of alleviating the effects of vaccinia virus by utilization of an effective concentration for the inhibition of vacinnia virus in tissue culture of (±)-3-deazaaristeromycin.

5. A composition for alleviating the effects of a virus substrate selected from the group consisting of herpes simplex type I, HL-23 type and vaccinia virus which comprises utiliz-

ing an effective concentration for the inhibition of a virus substrate selected from the group consisting of herpes simplex type 1, HL-23 type virus and vaccinia virus in tissue culture of (±)-3-deazaaristeromycin.

6. The composition according to claim 5 wherein the virus is herpes simplex type I.

4,386,094

4-LOWER ALKYL-3-PHENOXYPYRIDINE-1-OXIDE AND A METHOD FOR ITS PRODUCTION

Donald E. Butler, Ann Arbor, and Ivan C. Nordin, Holland, both of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Aug. 18, 1980, Ser. No. 179,365
Int. Cl.³ C07D *213/89;* A61K *31/44*
U.S. Cl. 424—263 9 Claims

1. 4-Loweralkyl-3-phenoxypyridine-1-oxide.

3. A pharmaceutical composition useful for treating convulsions in a mammal which comprises an anticonvulsive effective amount of a 4-loweralkyl-3-phenoxypyridine-1-oxide in combination with a pharmaceutically acceptable carrier.

4,386,095

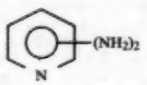
DIAMINOPYRIDINES TO IMPROVE COGNITION

Gary E. Gibson, Larchmont, and Christine J. Peterson, Yonkers, both of N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Feb. 22, 1982, Ser. No. 351,087
Int. Cl.³ A61K *31/44*
U.S. Cl. 424—263 10 Claims

1. A method to ameliorate decreased cognition occurring with aging in mammals which comprises administering to a mammal suffering from age-related cognition deficiency a cognition-improving amount of an unsubstituted diaminopyridine of the formula

(I)



4,386,096

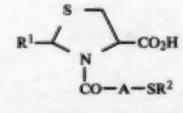
ANTIHYPERTENSIVE 4-THIAZOLIDINECARBOXYLIC ACIDS (FURYL AND THIENYL DERIVATIVES)

Junichi Iwao, Takarazuka; Masayuki Oya, Osaka; Toshio Baba, Suita; Tadashi Iso, Tondabayashi, and Takehisa Chiba, Kyoto, all of Japan, assignors to Santen Pharmaceutical Co., Ltd., Osaka, Japan

Division of Ser. No. 23,397, Mar. 23, 1979. This application Mar. 2, 1981, Ser. No. 239,601
Claims priority, application Japan, Apr. 8, 1978, 53-41632; Apr. 25, 1978, 53-49657; Jul. 3, 1978, 53-81116
Int. Cl.³ C07D *277/04;* A61K *31/425*
U.S. Cl. 424—270 19 Claims

1. A compound of the formula

(I)



wherein R^1 is selected from the group consisting of furyl, thienyl, and furyl and thienyl each substituted with at least one substituent selected from the group consisting of lower alkyl, hydroxy, mercapto, lower alkoxy, lower alkylenedioxy, lower alkanoyloxy, benzoyloxy, benzyloxycarbonyloxy, lower alkanoylmercapto, benzoylmercapto, benzyloxycarbonylmercapto, halogen, nitro, amino, lower alkylamino, lower alkanoylamino, benzoylamino or benzyloxycarbonylamino;

R^2 is hydrogen or benzoyl;

A is straight or branched alkylene of 1 to 3 carbon atoms; and pharmaceutically acceptable salts thereof; wherein the terms lower alkyl, lower alkoxy, lower alkylene and lower alkanoyl refer to groups having 1 to 6 carbon atoms.

4,386,097

BENZIMIDAZOLES, PROCESSES FOR THEIR PREPARATION AND PHARMACEUTICAL PREPARATIONS CONTAINING SUCH COMPOUNDS

Srinivasachari Rajappa, and Vasudevan Sudarsanam, both of Bombay, India, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 61,097, Jul. 26, 1979, Pat. No. 4,297,365. This application Jul. 29, 1981, Ser. No. 288,078
The portion of the term of this patent subsequent to Oct. 27, 1998, has been disclaimed.
Int. Cl.³ C07D *519/00;* A61K *31/425*
U.S. Cl. 424—270 3 Claims

1. 2-Carbomethoxyamino-5(6)-(4-methyl-2-n-butylamino-5-thiazoloyl)-benzimidazole and a therapeutically acceptable salt thereof.

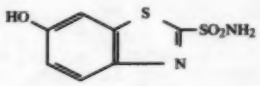
4,386,098

6-HYDROXY-2-BENZOTHIAZOLESULFONAMIDE FOR THE TOPICAL TREATMENT OF ELEVATED INTRAOCULAR PRESSURE

Otto Wolterdorf, Jr., Chalfont; Stuart R. Michelson, Lansdale; John M. Sondey, Hatfield, and Harvey Schwam, Lafayette Hills, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 3, 1981, Ser. No. 317,807
Int. Cl.³ A61K *31/425*
U.S. Cl. 424—270 7 Claims

1. A method for treating elevated intraocular pressure which comprises topically applying to an affected eye an intraocular pressure lowering effective amount of a carbonic anhydrase inhibitor of the formula:



or an ophthalmologically acceptable salt thereof.

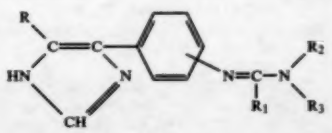
4,386,099

IMIDAZOLYLPHENYL AMIDINES, PHARMACEUTICAL COMPOSITIONS CONTAINING SAME AND USE THEREOF

Enzo Cereda, Tortona; Arturo Donetti, Milan; Piero del Soldato, and Mario Bergamaschi, both of Monza, all of Italy, assignors to Istituto de Angeli S.p.A., Milan, Italy

Filed Nov. 19, 1981, Ser. No. 322,903
Claims priority, application Italy, Nov. 28, 1980, 26323 A/80
Int. Cl.³ A61K *31/415;* C07D *233/64*
U.S. Cl. 424—273 R 20 Claims

1. A compound of the formula



in which R, R_1, and R_3, which may be the same or different, each represent a hydrogen atom or a lower alkyl group, and

R_2 represents a linear or branched alkyl, alkenyl, or alkynyl group, a cyano group, a hydroxyl group, a substituted or unsubstituted cycloalkyl or cycloaliphatic alkynyl group, a bicyclic group, an aralkyl or aryl group optionally substituted by halogen, methyl, methoxy, or methylenedioxy groups, or a substituted or unsubstituted heterocyclicalkyl or heterocyclic group which may also contain a further hetero atom, or a non-toxic, pharmacologically acceptable acid addition salt thereof.

18. A pharmaceutical composition for the treatment of disorders of the gastrointestinal tract which consists essentially of inert, pharmacologically acceptable carrier and an effective amount of a compound of claim **1**.

4,386,100

SPIRO [IMIDAZOLIDINE 4,3'-INDOLINE]2,2',5-TRIONES, COMPOSITIONS AND USE

David R. Brittain, Macclesfield, and Robin Wood, Hazel Grove, both of England, assignors to Imperial Chemical Industries PLC, London, England

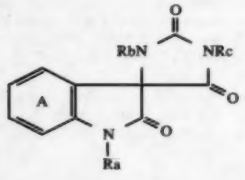
Filed May 11, 1982, Ser. No. 377,134

Claims priority, application United Kingdom, May 12, 1981, 8114399

Int. Cl.[3] **C07D** *487/10;* **A61K** *31/415*

U.S. Cl. 424—273 R **12 Claims**

1. A non-toxic biodegradable derivative of 1'-substituted-spiro[imidazolidine-4,3'-indoline]-2,2',5-trione, said derivative having the formula:



I

wherein Ra is a (1–12 C)alkyl radical, a phenyl naphthylmethyl or cinnamyl radical, the aromatic rings of which optionally bear one or two halogeno radicals, or Ra is a benzyl radical optionally bearing one, two or three substituents independently selected from halogeno trifluoromethyl, (1–4 C)alkyl, (1–4 C)alkoxy, nitro, cyano and hydroxy radicals; Rb and Rc are independently selected from hydrogen and non-toxic biodegradable protecting radicals, but are not both hydrogen; and benzene ring A optionally bears one substituent selected from halogeno, (1–4 C)alkyl, (1–4 C)alkoxy, nitro and hydroxy radicals, or bears two substituents independently selected from halogeno, (1–4 C)alkyl and nitro radicals.

12. A method of inhibiting the enzyme aldose reductase which comprises administering to a warm-blooded animal requiring such treatment an aldose reductase inhibitory amount of a non-toxic biodegradable derivative having the formula I as claimed in claim **1**.

4,386,101

UNSYMMETRICAL BIS-CARBAMATES AND THEIR USE FOR COMBATING PESTS

Jozef Drabek, Oberwil, Switzerland, and Manfred Böger, Weil am Rhein, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

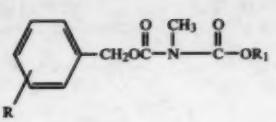
Filed Nov. 9, 1981, Ser. No. 319,865

Claims priority, application Switzerland, Nov. 20, 1980, 8590/80; Dec. 30, 1980, 9643/80; Sep. 25, 1981, 6206/81

Int. Cl.[3] **A01N** *47/22;* **C07D** *307/86*

U.S. Cl. 424—285 **10 Claims**

1. A compound of the formula



wherein

R is hydrogen, halo, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, nitro or 2,3-methylenedioxy; and

R_1 is a phenyl, dihydrobenzofuryl, or naphthyl group, said group being unsubstituted or substituted with alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylthio of 1 to 4 carbon atoms, alkoxyalkyl of up to 4 carbon atoms in each of the alkoxy and alkyl portions, alkylthioalkyl of up to 4 carbon atoms in each alkyl portion, halo, amino, methylamino, dimethylamino, cyano, nitro, ethylenedioxymethyl, dimethylaminomethylideneamino, 1-methoxy-2-chloroethoxy or 1-methoxyprop-2-yl, or in addition in the case of phenyl, 2,3 or 3,4-methylenedioxy and 2,3 or 3,4-isopropylidenedioxy.

10. The method of combating insects and acarids which comprises applying an insectidally or acaricidally effective amount of a compound according to claim **1** to the locus of insects or acarids.

4,386,102

PHENYL-N-(CYANOALKYLSULFENYL)-N-METHYL-CARBAMATES AND THE USE THEREOF IN PEST CONTROL

Manfred Böger, Weil am Rhein, Fed. Rep. of Germany, and Józef Drabek, Oberwil, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

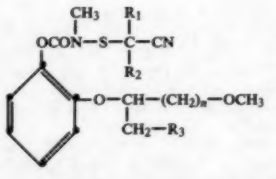
Filed Dec. 7, 1981, Ser. No. 327,879

Claims priority, application Switzerland, Dec. 17, 1980, 9305/80

Int. Cl.[3] **A01N** *47/22;* **C07C** *125/067*

U.S. Cl. 424—304 **7 Claims**

1. A phenyl-N-(cyanoalkylsulfenyl)-N-methylcarbamate of the formula



wherein each of R_1 and R_2 is methyl, or both together with the carbon atom to which they are attached form a cyclopentyl radical, R_3 is hydrogen or chlorine, and n is 0 or 1.

6. A method of controlling insects and acarids, which comprises applying to the locus thereof a pesticidally effective amount of a compound according to claim **1**.

4,386,103

DICHLOROAMINO ACID DERIVATIVES USEFUL AS POTENT GERMICIDAL AND FUNGICIDAL AGENTS

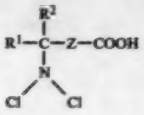
Stefano A. Pogany, and Takeru Higuchi, both of Lawrence, Kans., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jan. 30, 1981, Ser. No. 229,805

Int. Cl.[3] **A61K** *31/225, 31/95;* **C07C** *69/40, 69/42, 101/10*

U.S. Cl. 424—313 **10 Claims**

1. A compound having the formula:



wherein

R^1 and R^2 are independently

(a) lower alkyl;

(b) lower cycloalkyl;

(c) lower (cycloalkyl-alkyl);

(d) phenyl or lower alkyl-substituted phenyl;

(e) halosubstituted phenyl;

(f) lower alkoxy-substituted phenyl;

(g) phenyl (lower alkyl); or

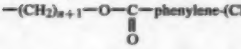
R^1 and R^2 joined together form lower alkylene; and

Z is

(a) lower alkylene;

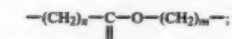
(b) $-(CH_2)_n$-phenylene-$(CH_2)_m-$ wherein n and m independently are integers from 0 to 5;

(c)

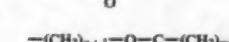


(d)

(e) $-(CH_2)_{n+1}-O-(CH_2)_m-$; wherein n is an integer from 0 to 3 and m an inter from 0–20;



(f)



(g)

or a pharmaceutically acceptable salt thereof.

4,386,104

PROCESS FOR THE TREATMENT OF ACNE

Marcella Nazzaro-Porro, Via Viminale 38, Rome, Italy

Division of Ser. No. 965,584, Dec. 1, 1978, Pat. No. 4,292,326, which is a continuation-in-part of Ser. No. 895,565, Apr. 12, 1978, abandoned. This application Jun. 29, 1981, Ser. No. 278,720

Claims priority, application Italy, Apr. 19, 1977, 22617 A/77; Dec. 30, 1977, 31471 A/77

Int. Cl.³ A61K *31/19*

U.S. Cl. 424—317 **6 Claims**

1. A method for the treatment of an individual exhibiting acne which comprises administering to said individual a therapeutically effective amount of an active ingredient in a pharmaceutically acceptable carrier until said condition is reduced or its further development is arrested wherein said active ingredient is at least one dicarboxylic acid containing from 7 to 13 carbon atoms selected from the group consisting of pimelic acid, suberic acid, sebacic acid, azelaic acid, 1,9-nonanedicarboxylic acid, 1.10-decanedicarboxylic acid, and 1,11-undecanedicarboxylic acid or a mono or dimercapto derivative of said acid or a salt thereof.

4,386,105

USE OF ALPHA, ALPHA-DIALKYL ADAMANTYLETHYLAMINES TO TREAT MEASLES

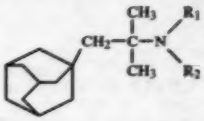
Clyde R. Kinsolving, Fairport, and Ronald C. Griffith, Pittsford, both of N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Feb. 19, 1982, Ser. No. 350,535

Int. Cl.³ A61K *31/13*

U.S. Cl. 424—325 **6 Claims**

1. A method for treating measles virus in warm-blooded animals comprising administering to the animals an effective amount for treating the measles virus of a composition comprising (i) a compound of formula I or its acid salt:



(I)

wherein R_1 and R_2 are selected from the class consisting of H and $-CH_3$; and (ii) at least one pharmaceutically acceptable carrier, wherein the compound is 0.01 to 95% by weight of the composition.

4,386,106

PROCESS FOR PREPARING A TIME DELAYED RELEASE FLAVORANT AND AN IMPROVED FLAVORED CHEWING GUM COMPOSITION

Carleton G. Merritt, Syracuse; Winston H. Wingerd, Camillus, and David J. Keller, Weedsport, all of N.Y., assignors to Borden, Inc., Columbus, Ohio

Filed Dec. 1, 1981, Ser. No. 326,188

Int. Cl.³ A23G *3/30*; A23L *1/222, 1/223*

U.S. Cl. 426—5 **27 Claims**

1. A method for preparing a delayed release solid encapsulated flavorant composition for use in chewable compositions characterized by delayed controlled release of substantially all the active encapsulated flavorant after a significant period of chewing, i.e. after approximately 2–3 minutes or more chewing, comprising the steps of:

(a) preparing an aqueous emulsion of a flavorant which comprises water distillable components in an at least partially hydrophilic encapsulation material comprising gelatin, a natural gum and plasticizer;

(b) drying said emulsion to produce a uniform solid matrix product having the flavorant containing substantially all of its water distillable components i.e. low boilers within a solid emulsion matrix of said encapsulation material;

(c) milling said dried solid matrix to a particle size of less than 20 mesh to produce solid powder; and

(d) coating said solid power with a water insoluable material selected from the group consisting of polyvinyl acetate, polyvinyl alcohol, zein, high Bloom gelatin having a Bloom of over 100 to 300 and ethylcellulose to produce an encapsulated flavorant having a relatively thin water insoluble coating which delays release of flavorant under chewing and the hydrolytic condition of the mouth for a controlled period of time and yet which will thereafter release substantially all of its original flavor notes at desired flavor levels and over a sustained period of time without having significant amounts of flavorant dissolved in the water insoluble coating material.

4,386,107

POLLEN SUBSTITUTE FOR USE IN APICULTURE

Yves Vrignaud, 5 avenue Rivoli, 92190 Meudon, and Michel Belin, 18 rue du Bourg Voisin, 21140 Semur en Auxois, both of France

Filed May 22, 1981, Ser. No. 266,189

Claims priority, application France, May 29, 1980, 80 11894

Int. Cl.³ A23J *3/00*; A23K *1/18*

U.S. Cl. 426—62 **12 Claims**

1. A food pollen substitute for use in apiculture, wherein said substitute contains by weight approximately:

60 to 66% lactic yeasts,

32 to 38% vegetable proteins,

1 to 2.5% whole-egg powder

with a total protein content of approximately 23 to 25% by weight.

4,386,108

COATED COCONUT, METHOD OF PREPARATION AND ICING THEREFROM

Gary W. Richter, Minneapolis, Minn., assignor to General Mills, Inc., Minneapolis, Minn.

Filed Jan. 18, 1982, Ser. No. 340,440

Int. Cl.³ A23G *3/00*; A23L *1/36*

U.S. Cl. 426—93 **6 Claims**

1. A method of producing coconut pieces stabilized against moisture migration, comprising the steps, in sequence, of:

(a) providing dehydrated coconut pieces;

(b) applying a dilute aqueous solution of a water soluble calcium salt sufficient to provide up to about 0.1% weight calcium based on the dry weight of the coconut pieces to form calcium-laden coconut pieces;

(c) drying the pieces to a moisture content of 12% to a moisture content of about 16% by weight;

(d) applying an aqueous solution of up to about 3% by weight low viscosity sodium alginate in amounts sufficient to provide up to about 0.45% alginate based on the dry weight of coconut pieces to form alginate encased coconut pieces; and

(e) drying the pieces to a final moisture content of from about 10% to about 15% by weight.

4,386,109

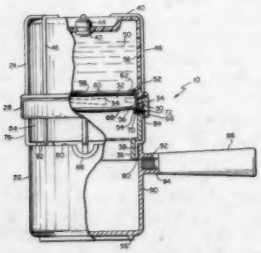
MICROWAVE EXPRESSO COFFEE MAKER AND PROCESS

Robert F. Bowen, Burlington; George Freedman, and Wesley W. Teich, both of Wayland, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Feb. 25, 1981, Ser. No. 238,251

Int. Cl.³ A23F *5/26*; A47J *31/02, 31/24*

U.S. Cl. 426—241 **18 Claims**



1. The method of making espresso coffee in a microwave oven comprising the steps of:

pouring a fluid into a substantially cylindrical pressurizable microwave transparent container having an open end on top surrounded and defined by a lip on the container;

inserting a perforated metal basket in said container through said open end, said basket having a flange seated on said lip of said open end wherein the bottom of said basket is supported slightly above said fluid;

positioning a heaping supply of coffee grounds in said basket;

securely attaching a ring collar to said container, said ring collar having a perforated metal plate covering said open end and pressing downwardly on said grounds, compressing said grounds between said basket and said plate;

inverting said container, metal basket, and attached ring collar, said fluid being retained in said container by the size of the perforations in the perforated metal basket and plate and said compressed grounds; heating said fluid in said inverted container with microwave energy to raise the pressure within said container wherein said fluid is forced through said perforated metal basket and plate and said grounds to make espresso coffee;

collecting said espresso coffee in a metallic pot within the field of said microwave energy wherein the beverage produced is shielded from said microwave energy; and

providing for the rapid escape of gases from said pot.

4,386,110

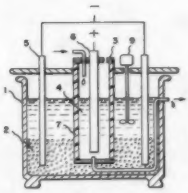
ELECTRICAL TREATMENT METHOD OF SOYBEAN PROTEIN

Minoru Komeyasu; Yoshisuke Miura, and Hiroyoshi Sakai, all of Hiroshima, Japan, assignors to Hiroshima Prefecture, Hiroshima, Japan

Filed Jan. 8, 1982, Ser. No. 338,575

Int. Cl.³ C25B *3/04*

U.S. Cl. 426—244 **3 Claims**



1. An electrolytic treatment method for soybean protein to improve its quality and to decrease its deterioration comprising:

setting a mixture of soybean protein and solvent in a first electrolytic tank having a cathode;

setting solvent in a second electrolytic tank having an anode which is separated from said first electrolytic tank; and

supplying DC voltage between said anode and cathode and through an ionic flow means between said first and second tanks.

4,386,111

FAT BLEND

Jan Van Heteren; Jacobus N. Pronk, both of Vlaardingen; Willem J. Smeenk, Castricum, and Leo F. Vermaas, Maassluis, all of Netherlands, assignors to Lever Brothers Company, New York, N.Y.

Filed May 27, 1981, Ser. No. 267,284

Claims priority, application Netherlands, May 30, 1980, 8003143

Int. Cl.³ A23D *3/02, 5/00*

U.S. Cl. 426—603 **22 Claims**

1. Fat blend suitable to be worked into margarines, low-calorie spreads or cooking fats comprising:

(a) 30–98 parts by weight of an oil liquid at room temperature; and

(b) 2–35 parts by weight of a randomly interesterified hydrogenated blend of triglycerides prepared from a mixture of:

(b_1) 20–80 parts by weight of an olein fraction of a fat rich in lauric acid residues; and

(b_2) 80–20 parts by weight of a fat rich in fatty acid residues having 16–18 carbon atoms;

the percentage of saturated fat residues being 75% or more of the fatty acid residues of the interesterified fat.

4,386,112

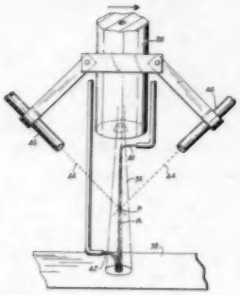
CO-SPRAY ABRASIVE COATING

Harry E. Eaton, Woodstock, and Richard C. Novak, Glastonbury, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 2, 1981, Ser. No. 317,685

Int. Cl.³ B05D *1/10*

U.S. Cl. 427—34 **5 Claims**



1. A method utilizing a plasma spray gun for depositing an abrasive grit coating on a substrate, including the steps of:

generating a high temperature plasma stream;

injecting particles of matrix material into the plasma stream;

injecting particles of abrasive grit into the plasma stream at a location downstream of the location at which said particles of matrix material are injected, in a direction approximately one hundred eighty degrees (180°) apart at the circumference of the plasma stream from the direction of injection of the matrix material particles, and at a distance from the substrate to be coated such that the matrix particles and the grit particles come into simultaneous contact with the surface of the substrate to be coated and with each other; and

traversing the plasma spray gun across the substrate to be coated.

4,386,113

METHOD OF MAKING A MAGNETIC RECORDING MEDIUM

Koichi Shinohara, Kobe, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

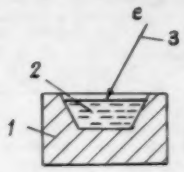
Filed May 29, 1981, Ser. No. 268,151

Claims priority, application Japan, May 29, 1980, 55-72304

Int. Cl.³ B05D *3/06*

U.S. Cl. 427—42 **3 Claims**

1. A method of making a magnetic recording medium including a step of continuously depositing a ferromagnetic layer with the use of electron beam for heating an evaporation source material, in which a container for retaining said source material in a heating position is made of a ceramics having a composition com-



prising 97 to 99 wt. % of MgO, 0.2 to 0.5 wt. % of Al_2O_3 and 0.4 to 1 wt. % of SiO_2.

4,386,114

METHOD OF MANUFACTURING A THIN-FILM MAGNETIC FIELD SENSOR

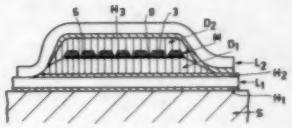
Margret Harms, Hamburg, and Holger Lüthje, Halstenbek, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 21, 1981, Ser. No. 295,052

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1980, 3032708

Int. Cl.³ B05D *3/14*

U.S. Cl. 427—47 **10 Claims**



1. A method of manufacturing a thin-film magnetic field sensor including a substrate having a surface for supporting an anisotropic magnetic layer, comprising the steps of:

depositing an isotropic magnetic layer on the substrate surface in the absence of a magnetic orienting field;

cutting grooves in the deposited isotropic layer to form a plurality of parallel elongate strips, and

tempering the strips in a magnetic orienting field applied in a direction longitudinal of each strip, whereby the strips exhibit an easy axis of magnetization in the direction of the orienting field.

4,386,115

PROCESS FOR THE PREPARATION OF SUPERCONDUCTING COMPOUND MATERIALS

Berthold Krevet, Dettenheim-Liedolsheim; Wolfgang Schauer, Pfinztal, and Fritz Wüchner, Germersheim, all of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany

Filed Mar. 20, 1981, Ser. No. 246,050

Claims priority, application European Pat. Off., Mar. 27, 1980, 80101648

Int. Cl.³ C23C *11/00*

U.S. Cl. 427—62 **5 Claims**

1. In a process for the preparation of a composite material containing a substrate and a metallic layer of a metastable or unstable Nb_3Ge phase strongly adhering to the substrate surface, and being deposited onto the substrate from the gas or vapor phase to a desired thickness, the improvement comprising:

(a) using very pure niobium and germanium components for formation of the metastable or unstable phase, having

respective impurity concentrations of less than 100 ppm, by weight;

(b) effecting an initial deposition of the layer to a layer thickness of about 5 to 20 nm by simultaneously depositing niobium and germanium on the substrate, while reducing the mobility of the components on the substrate to thereby promote germination of a subsequently deposited A15 Nb_3Ge phase, by depositing the components onto a substrate which is cold, at a temperature in the range of room temperature or below; and

(c) heating the substrate containing the initially deposited layer to a temperature at which an A15 Nb_3Ge phase is formed and depositing the niobium and germanium components for the remainder of the layer up to the desired thickness, from the gas or vapor phase onto the heated substrate to produce the subsequently deposited A15 Nb_3Ge phase.

4,386,116

PROCESS FOR MAKING MULTILAYER INTEGRATED CIRCUIT SUBSTRATE

Krishna K. Nair, Binghamton, and Keith A. Snyder, Vestal, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 24, 1981, Ser. No. 334,297

Int. Cl.³ B05D 5/12

U.S. Cl. 427—99 **4 Claims**

1. A process for making a multilayer integrated circuit substrate having via connections which comprises:

depositing a first layer of chrome-copper-chrome onto an inorganic substrate;

photoetching circuitry on said first layer;

applying a layer of polyimide;

photoetching via holes in the polyimide down to said circuitry;

etching the top layer of chrome in said first layer to expose copper in said via holes;

evaporating a second layer of copper-chrome at a high temperature of said substrate of 360°–380° C. to form a copper interface by the copper layer of said first layer and the copper layer of said second layer at the base of said via holes which has a low resistance; and

photoetching circuitry on said second copper-chrome layer.

4,386,117

COATING PROCESS USING ALKOXY SUBSTITUTED SILICON-BEARING REACTANT

Roy G. Gordon, 22 Highland St., Cambridge, Mass. 02138

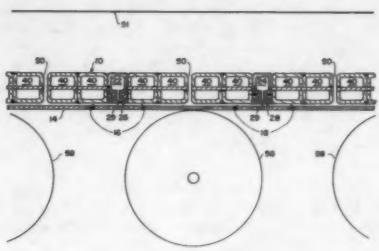
Filed Nov. 20, 1981, Ser. No. 323,249

Int. Cl.³ C03C 17/245

U.S. Cl. 427—109 **17 Claims**

1. In a process for making a silicon-oxide-bearing, transparent coating by reacting (a) silicon-bearing gas at elevated temperatures with (b) a gaseous oxidizing agent for oxidizing said silicon at the hot surface of an article to be coated, the improvement wherein said silicon-bearing gas comprises at least one silicon-bearing compound of the formula

$$R(R_2Si)_nOR$$



wherein R is any lower alkyl and n is any integer from 2 to about 10.

4,386,118

PLASTIC BEARING MATERIALS

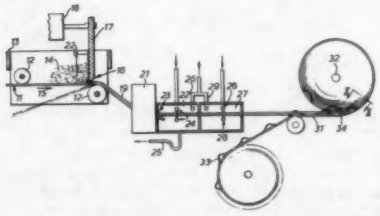
David S. Young, 11, Meadow View, Marlow, Buckinghamshire, England

Filed Jul. 13, 1976, Ser. No. 704,800

Claims priority, application United Kingdom, Jul. 16, 1975, 29800/75

Int. Cl.³ B05D 3/02, 3/12

U.S. Cl. 427—178 **15 Claims**



1. A process for making an elongate strip of bearing material, which comprises:

applying a layer of polyarylene sulfide to one surface of a backing;

heating the sulfide to at least its melting point;

partially curing said applied polyarylene sulfide;

rapidly reducing the temperature of the melt in less than 5 seconds to ambient temperature prior to complete cure of said sulfide; and thereafter,

curing said cooled sulfide.

4,386,119

WET PROCESS AND APPARATUS FOR RENDERING CELLULOSIC INSULATION PARTICLES FIRE-RETARDANT

Samuel M. Draganov, Tustin, Calif.

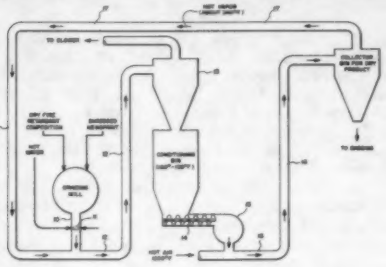
Continuation-in-part of Ser. No. 32,119, Apr. 22, 1979, abandoned. This application Sep. 2, 1980, Ser. No. 183,359

Int. Cl.³ E04B 1/74

U.S. Cl. 427—212 **14 Claims**

1. A wet process for producing a fire-retardant, cellulosic, insulation material having superior insulating properties by the use of considerably less fire-retardant composition than normally employed in conventional dry processes, comprising the

steps of applying to the component particles of a mass of finely divided, cellulosic insulation material an aqueous solution of a nonhygroscopic, boric acid or borate fire-retardant composition, said solution containing an effective amount of but considerably less fire-retardant composition than normally employed in conventional dry processes and having substantially no more add-on water than will be effective to dissolve said composition and distribute it under hot and humid conditions



maintained for a prolonged period of time; thereafter maintaining the so-treated wet mass of finely divided cellulosic insulation material under hot and humid conditions for a period of time sufficiently prolonged to achieve substantially full distribution of said fire-retardant composition with respect to the individual particles of said mass; and withdrawing fully conditioned material from said mass and subjecting it to a drying treatment.

4,386,120

PROCESS FOR PRODUCING POLYACRYLIC ACID SALT GRANULES EASILY SOLUBLE IN WATER

Fumihiro Sato, Urayasu; Masayuki Iwasaki; Takashi Terada, both of Yono; Hiroshi Ninomiya, Sayama, and Minoru Nakada, Tokyo, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 109,858, Jan. 7, 1980. This application Jun. 24, 1981, Ser. No. 276,808

Int. Cl.³ A61K *9/30*; C08F *120/04*

U.S. Cl. 427—213 **12 Claims**

1. A process for producing easily water-soluble sodium polyacrylate granules characterized in that sodium polyacrylate powder is granulated according to fluidized bed granulation method while an aqueous solution of the same compound as the said powder, is sprayed thereon and an amount of the compound sprayed is 0.3–0.8 g per kilogram of the said powder, and then the granules are dried and sieved to collect a fraction of 16–48 mesh.

4,386,121

SPRAY PROCESS FOR CHEMICAL NICKEL PLATING

Newton W. McCready, Newtown Square, and Stephan S. Groffman, Philadelphia, both of Pa., assignors to Amchem Products, Inc., Ambler, Pa.

Filed Nov. 5, 1981, Ser. No. 318,680

Int. Cl.³ B05D *7/22, 1/02, 7/14*; C23C *3/02*

U.S. Cl. 427—235 **15 Claims**

1. A process for applying a nickel metal coating to a clean ferrous metal can comprising the steps of:

(a) forming an aqueous solution comprising

(i) from about 0.02 to about 0.13 moles per liter of divalent nickel ion, and

(ii) from about 0.02 to about 0.19 moles per liter of hypophosphite ion;

(b) heating said aqueous solution to a temperature in the range of from about 140° to about 190° F.;

(c) spraying the surfaces of the ferrous metal can with said heated aqueous solution for a period of from about 10 seconds to about 1 minute; and

(d) removing excess aqueous solution from the surfaces of the ferrous metal can.

4,386,122

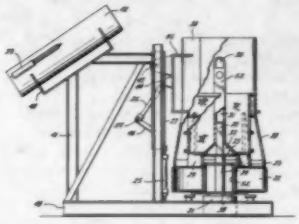
METHOD AND APPARATUS FOR GALVANIZING ARTICLES

J. Calvin Birdsall, P.O. Box 218789, Houston, Tex. 77218

Filed Sep. 14, 1981, Ser. No. 301,876

Int. Cl.³ B05D *3/12*

U.S. Cl. 427—241 **12 Claims**



12. A method for removing adhering molten metal from metallic articles, comprising:

applying a sufficiently high torque to accelerate said articles to substantially at least 500 rpm in less than substantially 2 seconds and to discharge substantially all excess molten metal from said articles, and

thereafter oppositely applying substantially the same torque to decelerate said articles to zero rpm in less than substantially 3 seconds and to separate each of said articles one from the other.

4,386,123

ARTICLE OF MANUFACTURE AND METHODS OF MANUFACTURING

Joseph W. Coburn, Jr., 675 Ocean Ave., Long Branch, N.J. 07740

Filed Sep. 28, 1981, Ser. No. 305,997

Int. Cl.³ B44F *1/10*; B29D *11/00*; B29C *9/00*; B44C *1/26*

U.S. Cl. 428—29 **11 Claims**

1. An article of manufacture, comprising:

a layer of substantially transparent predetermined plastic material having a top surface and a bottom surface;

a predetermined design formed into said bottom surface;

a coating of predetermined reflective material covering said predetermined design;

said layer of predetermined plastic material and said coating of predetermined reflective material formed into a predetermined shape and said substrate provided on its top surface with an integrally formed, raised, continuous, peripheral edge providing a mold;

a body of substantially transparent predetermined composition residing within said mold and adhered to said substrate, said composition formed into a dome shape to provide a magnifying lens effect to said top surface; and

upon light being transmitted through said body of substantially transparent predetermined composition and said substrate of substantially transparent predetermined plastic material and striking said reflective coating, said light being reflected back through said plastic material and said body to provide a visual effect determined substantially by said predetermined design.

5. A method of manufacturing an article of manufacture, comprising the steps of:

providing a layer of substantially transparent predetermined plastic material having a top surface and a bottom surface;

forming said bottom surface into a predetermined design;

coating said bottom surface formed into said predetermined design with a coating of predetermined reflective material;

coating said coating of reflective material with a coating of pressure sensitive adhesive material;

covering said coating of pressure sensitive adhesive material with a layer of release material;

providing at least said layer of plastic material and said coating of reflective material with a predetermined shape and simultaneously providing said top surface of said layer of plastic material with an integrally formed, raised, continuous, peripheral edge providing a mold;

depositing an amount of substantially transparent predetermined polyurethane in substantially liquid form into said mold which polyurethane flows outwardly to said raised peripheral edge and forms a positive meniscus; and

curing said polyurethane to harden said polyurethane into a dome shape to provide a magnifying lens effect to said top surface.

4,386,124
WRAPPING MATERIALS

Mutsuo Akao, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 5, 1981, Ser. No. 290,023

Claims priority, application Japan, Aug. 19, 1980, 55-113594

Int. Cl.³ B65D *81/24;* B32B *27/30*

U.S. Cl. 428—35 **7 Claims**

1. A wrapping material, comprising:

first and second mono-axially stretched thermoplastic resin films on both surfaces thereof, said films laminated in such a manner that the stretching axes of the mono-axially stretched thermoplastic resin films cross each other at an angle of 45° to 90°; and

an adhesive layer consisting essentially of an ethylene-ethyl acrylate copolymer resin or an ethylene-ethyl acrylate copolymer resin and light-shielding substances, which ethylene-ethyl acrylate copolymer resin has an ethylene/ethyl acrylate copolymerizing ratio of about 95/5 to about 65/35 by weight, a molecular weight of about 15,000 to about 45,000, a Vicant softening point of about 40° C. to about 80° C. and a melt index of about 1 g/10 min to about 20 g/10 min, sandwiched between said first and second films.

7. A bag for wrapping light-sensitive material made of a wrapping material having an improved anti-static property, said wrapping material comprising:

first and second mono-axially stretched theremoplastic resin films on both surfaces thereof, said films laminated in such a manner that the stretching axes of the mono-axially stretched thermoplastic resin films cross each other at an angle of 45° to 90°; and

an adhesive layer consisting essentially of an ethylene-ethyl acrylate copolymer resin or an ethylene-ethyl acrylate copolymer resin and light-shielding substances, which ethylene-ethyl acrylate copolymer resin has an ethylene/ethyl acrylate copolymerizing ratio of about 95/5 to about 65/35 by weight, a molecular weight of about 15,000 to about 45,000, a Vicant softening point of about 40° C. to about 80° C. and a melt index of about 1 g/10 min to about 20 g/10 min, sandwiched between said first and second films.

4,386,125
FILM, SHEET OR TUBE OF A BLOCK COPOLYMER OR A COMPOSITION CONTAINING THE SAME

Toshinori Shiraki, Yamato; Susumu Hoshi, Yokohama, and Fusakazu Hayano, Chigasaki, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Feb. 18, 1982, Ser. No. 349,863

Claims priority, application Japan, Feb. 20, 1981, 56-22989; Apr. 28, 1981, 56-63325; Jun. 22, 1981, 56-95314

Int. Cl.³ C08F *297/04;* C08L *53/02*

U.S. Cl. 428—36 **19 Claims**

1. An oriented film, sheet, or tube of a block copolymer having an excellent low-temperature shrinkage of not less than 15% in terms of a heat shrinkage factor at 80° C. in at least one direction, comprising, as a base polymer, a block copolymer or any mixture thereof (component (A)), said block copolymer having a melt flow of 0.001 through 70 g/10 min and having the following structure:

(a)	$(A-B)_n$	n = 2–10
(b)	$A+B-A)_n$	n = 2–10
(c)	$B+A-B)_n$	n = 2–10
(d)	$[(B-A\rightarrow_m]_{m+2}X$	n = 2–10 and m = 1–10
(e)	$[(A-B\rightarrow_m]_{m+2}X$	n = 2–10 and m = 1–10
(f)	$[(B-A\rightarrow_m]-B_{m+2}X$	n = 1–10 and m = 1–10, or
(g)	$[(A-B\rightarrow_m]-A_{m+2}X$	n = 1–10 and m = 1–10

wherein A is an aromatic vinyl hydrocarbon polymer block having a number-average molecular weight of 10,000 through 70,000, B is a polymer block composed mainly of a conjugated diene, and X is a residual group of a coupling agent or a polyfunctional initiator such as an organo polylithium compound, the weight ratio of the aromatic vinyl hydrocarbon to the conjugated diene being 60:40 through 95:5.

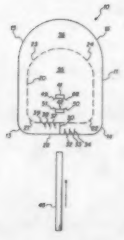
4,386,126
ARTICLE FOR MAKING A SUN VISOR AND FAN

Patricia K. Turner, 1710 Treehouse, Plano, Tex. 75023

Filed Aug. 28, 1981, Ser. No. 297,246

Int. Cl.³ B65D *65/28*

U.S. Cl. 428—43 **6 Claims**



1. A unitary article for the making of a fan and sun visor, comprising:

a piece of paper, and

a handle carried upon said piece of paper,

said piece of paper being perforated in a closed interior loop to define upon separation at said perforations a generally

rectangular fan upon which said handle is carried, and a visor portion having a bill, two sides, and bottom portions, said bottom portion being separated by a cut therethrough and having cuts on opposite respective edges of said separating cut to enable said bottom to be interlockingly connected to form said sun visor.

4,386,127

DENSE, ELEGANT AND PLIABLE SHEET MATERIAL COMPRISING FIBROUS BASE IMPREGNATED WITH A DIOL-HINDERED AMINE POLYURETHANE SYSTEM

Minoru Tanaka, Gifu, and Kenkichi Yagi, Kyoto, both of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

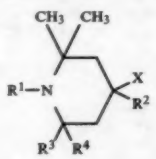
Continuation-in-part of Ser. No. 122,845, Feb. 20, 1980, Pat. No. 4,302,493. This application May 1, 1981, Ser. No. 259,896
Claims priority, application Japan, Aug. 14, 1979, 54-103424
The portion of the term of this patent subsequent to Nov. 24, 1999, has been disclaimed.
Int. Cl.[3] B32B 3/00, 27/12, 27/40, 33/00
U.S. Cl. 428—91 26 Claims

1. A composite sheet material comprising a fibrous sheet which is impregnated and/or coated with a polyurethane elastomer wherein said polyurethane elastomer comprises the reaction product of

(A) a polymeric diol having a molecular weight of about 800–5000,

(B) an organic polyisocyanate, and

(C) a chain extender comprising a low molecular weight organic diol, more than 2 mol % of which comprises a hindered amine compound of the formula (I)



(I)

wherein

R^1 is a substituent selected from the group consisting of hydrogen, oxygen, an alkyl group containing 1–12 carbon atoms, an alkenyl group containing 2–12 carbon atoms, an alkynyl group containing 2–12 carbon atoms, an aralkyl group containing 7–18 carbon atoms, an acyl group containing 1–12 carbon atoms, $-(R^5O)_nH$ and $-(COR^6CO_2R^7O)_m-H$, wherein R^5 is an alkylene group containing 1–12 carbon atoms, R^6 is a residue of an organic dicarboxylic acid containing 2–18 carbon atoms, R^7 is a residue of an organic diol containing 2–12 carbon atoms, n is an integer from 1 to 50 and m is an integer from 1 to 15;

R^2 is a substituent selected from the group consisting of hydrogen, an alkyl group containing 1–12 carbon atoms, an aralkyl group containing 7–18 carbon atoms, an alkenyl group containing 2–12 carbon atoms, an alkynyl group containing 2–12 carbon atoms, an aryl group containing 6–18 carbon atoms, and a cyano group; X is a substituent selected from the group consisting of a hydroxyl group, an amino group and a monoalkylamino group containing 1–12 carbon atoms, and said substituents whose part of or all of hydrogen bonded to oxygen and/or nitrogen may be substituted by $-(R^5O)_n-H$ and/or $-(COR^6CO_2-R^7O)_m-H$, and

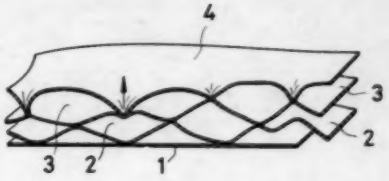
wherein R^3 and R^4 are the same or different alkyl groups containing 1–12 carbon atoms, R^3 and R^4 being independent or bonded to form a 5–12-membered alicyclic ring.

4,386,128

HEAT INSULATING LAMINATE

Yutaka Yoshikawa, C-409, Tsutsujigaoka Haim, 2-13-3, Shibazaki, Chofu-shi, Tokyo-to, Japan

Filed Feb. 4, 1981, Ser. No. 231,290
Claims priority, application Japan, Feb. 6, 1980, 55-013886
Int. Cl.[3] B32B 3/26, 3/28
U.S. Cl. 428—152 7 Claims



1. A heat insulating laminate, comprising:

a contractile thin film; a first noncontractile metal reflecting thin film at at least one side of the contractile film; at least a second noncontractile metal reflecting thin film at the same one side of the contractile film and located beyond the first noncontractile metal reflecting film;

the first noncontractile film being laminated to the contractile film by being bonded thereto at scattered small areas, and the second noncontractile film being laminated to the first noncontractile film at scattered small areas located between the first and the second noncontractile films;

the density of the bonding areas between adjacent films decreases in a stepwise manner from the density thereof between the contractile film and the first noncontractile film to the density thereof between each succeeding pair of adjacent noncontractile films toward the film farthest from the contractile thin film.

4,386,129

POROUS POLYMERIC FILMS

Philip Jacoby, Naperville, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

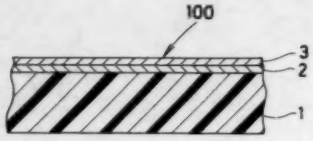
Filed Mar. 31, 1981, Ser. No. 249,673
Int. Cl.[3] B32B 7/02, 27/32; B28B 3/20
U.S. Cl. 428—215 7 Claims

1. A porous film with a thickness of about 0.010 to about 0.25 millimeters comprising a resinous polymer of propylene having alpha-form spherulites and polygonal pores with average diameters of about 3 to about 100 microns said pores corresponding to the location of beta-form spherulites.

4,386,130
LAMINATED FILM

Kenji Hayashi; Shoji Kobayashi, and Keisuke Ohshima, all of Ohtsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Sep. 25, 1981, Ser. No. 305,856
Claims priority, application Japan, Sep. 25, 1980, 55-132348
Int. Cl.³ B32B 7/02, 15/08
U.S. Cl. 428—215 13 Claims



1. In a laminated film having:
(A) an organic polymer film,
(B) a thin metal layer having a thickness of 30 to 500 A laminated on at least one surface of said organic polymer film,
(C) the improvement which comprises coating said thin metal layer with a transparent thin layer containing metal compounds and having a thickness of 0.02 to 0.3μ laminated on said thin metal layer (B),
wherein at least 60 wt. % of said transparent thin layer (C) comprises zirconium, silicon and oxygen, and at least 60 molar % of metal elements in the above transparent thin layer (C) comprises zirconium and silicon in the range of molar ratio Zr/Si of 80/20 to 20/80, whereby said film shows significant increases in resistance against abrasion, light, weather, and heat.

4,386,131
NON-WOVEN FABRICS AND IN PARTICULAR CLOTHS FOR HYGIENE USE

Bernard Chauvel, Ermont, France, assignor to Rhone-Poulenc Industries, Paris, France

Filed Nov. 12, 1981, Ser. No. 320,300
Claims priority, application France, Nov. 19, 1980, 80 24517
Int. Cl.³ D04H 1/58
U.S. Cl. 428—288 10 Claims

1. Non-woven fabrics comprising a layer of fibers and a binder fixing the fibers in the fabric comprising an interpolymer of a copolymer A of butadiene, styrene and at least one ethylenic unsaturated carboxylic acid and a polymer B of bis(2-chloroethyl)vinylphosphonate which is at least partly grafted on to the copolymer A.

4,386,132
FLY FISHING LINE

William A. Dille, Maplewood; Wayne E. Erickson, Saint Paul, and Leon D. Royer, White Bear Lake, all of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation of Ser. No. 134,527, Mar. 27, 1980, abandoned.
This application Sep. 18, 1981, Ser. No. 303,551
Int. Cl.³ D02G 3/00
U.S. Cl. 428—372 5 Claims

1. A floating fly fishing line comprising a core and having a substantially smooth plastic surface coating, said coating comprising plasticized polyvinyl chloride and at least one fluorinated polymer, said fluorinated polymer being derived from a fluoroaliphatic radical-containing vinyl monomer and a polyoxytetramethylene acrylate or methacrylate, and being capable of imparting to said plastic coating, when contained therein at about 0.25 percent by weight, a contact angle with water in air of greater than about 60°, a contact angle with gasoline in air of greater than about 30°, and a contact angle with mineral oil in air of greater than about 15°.

4,386,133
COATED BEADS WITH MACROMONOMER-STYRENE POLYMERIZATE COATING

Elizabeth A. Blommers, Newtown Square; David R. Warfel, Exton, and Alvin R. Ingram, West Chester, all of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Division of Ser. No. 219,465, Dec. 23, 1980, Pat. No. 4,333,970.
This application Mar. 8, 1982, Ser. No. 355,963
The portion of the term of this patent subsequent to Jun. 8, 1999, has been disclaimed
Int. Cl.³ C08J 9/14
U.S. Cl. 428—407 5 Claims

1. A composition of coated beads which exhibit antilumping properties upon preexpansion wherein each bead comprises a core of styrenic polymer bead and a coating of a copolymer of 75 to 90 percent by weight of a styrenic monomer and 2 to 25 percent by weight of a conjugated diene-styrene macromonomer which is an anionically prepared polymer of molecular weight between 5,000 and 50,000 terminated with a reactive monofunctional polymerizable group; said core comprising from 50 to 90 percent by weight of the coated bead and said coating comprising from 2 to 50 percent by weight of the coated bead; and said bead containing a blowing agent sufficient to expand the bead on heating.

4,386,134
PROCESS FOR IMPREGNATING CELLULOSIC MATERIALS AND PRODUCTS HEREBY OBTAINED

Josef Pühringer, Björnkällevägen 35, Täby 183 64, Sweden

PCT No. PCT/SE80/00124, § 371 Date Dec. 11, 1980, § 102(e) Date Dec. 11, 1980, PCT Pub. No. WO80/02249, PCT Pub. Date Oct. 30, 1980
PCT Filed Apr. 23, 1980, Ser. No. 220,049
Claims priority, application Sweden, Apr. 24, 1979, 7903581; Apr. 30, 1979, 7903786; Apr. 30, 1979, 7903787; Jun. 6, 1979, 7904931
Int. Cl.³ B05D 3/02; B32B 9/06, 15/04
U.S. Cl. 428—447 10 Claims

1. A process for impregnating wood, to improve its resistance to moisture and to increase its dimensional stability, comprising bringing the material into contact with an agent comprising a silane of the formula:

wherein R_1, R_2 and R_3 are same or different and are selected from the group consisting of alkoxy with 1 to 6 carbon atoms, and R_4 is equal to any of R_1, R_2 and R_3 or selected from the group consisting of alkyl and cycloalkyl with 1 to 6 carbon atoms, aryl, aralkyl and organo-functional radicals, in the presence of a polymerization catalyst.

9. Products prepared by the process of claim 1, 2, 3, 4, 5, 6, 7 or 8.

4,386,135
STABLE SILICONE-COATED RELEASE LINER FOR PRESSURE-SENSITIVE ADHESIVE SHEETS

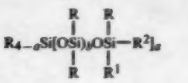
Karen J. Campbell, Anoka, and Jack L. Evans, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 11, 1982, Ser. No. 338,473
Int. Cl.³ B32B 27/06; C08G 77/06
U.S. Cl. 428—447 10 Claims

1. A release liner which, even after exposure to natural or artificial light in the presence of moisture vapor, displays release properties of less than 20 g/cm width with respect to normally tacky and pressure-sensitive adhesive tape, said liner

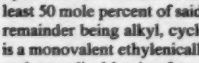
comprising a self-supporting sheet material having bonded to at least one face, a thin layer comprising noble metal and cured silicone polymer having substantially no residual ethylenic unsaturation and being the platinum-catalyzed reaction product of solvent-free liquid components consisting essentially of

(1) terminally unsaturated polydimethylsiloxane having the structural formula



in which a is 2, 3, or 4, b is 15–100, R and R^1 are monovalent hydrocarbon radicals free of aliphatic unsaturation, at least 50 mole percent of said radicals being methyl and the remainder being alkyl, cycloalkyl, aryl or aralkyl, and R^2 is a monovalent ethylenically unsaturated aliphatic hydrocarbon radical having 2 to 6 carbon atoms and

(2) polymethylhydrosiloxane crosslinking agent having the empirical formula

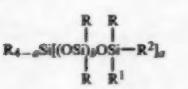


in which R^3 is bonded to a silicon atom and is a monovalent aliphatic or aromatic hydrocarbon radical or the halogenated derivative of such a radical, c is 0 to 3, and d is 0.005 to 2.0, the sum of c plus d being 0.8 to 3, there being at least 2 silicon-bonded hydrogen atoms present per molecule,

the ratio of silicon-bonded hydrogen in (2) to silicon-bonded ethylenically unsaturated radicals in (1) being from 1:1 to 20:1.

8. The method of making the release liner of claim 1 comprising the steps of

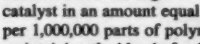
a. blending solvent-free silicone polymer having the empirical formula



in which a is 2, 3, or 4, b is 15–100, R and R^1 are monovalent hydrocarbon radicals free of aliphatic unsaturation, at least 50 mole percent of said radicals being methyl and the remainder being alkyl, cycloalkyl, aryl or aralkyl; and R^2 is a monovalent ethylenically unsaturated aliphatic hydrocarbon radical having 2 to 6 carbon atoms, with platinum catalyst in an amount equal to 10 to 200 parts of platinum per 1,000,000 parts of polymer,

b. maintaining the blend of polymer and catalyst at a temperature between 20° and 80° C. for a time between 5 minutes and 2 hours, sufficient to cause association of the platinum with the vinyl groups of said polymer,

c. mixing into said blend a solvent-free silicone crosslinking agent having the empirical formula



in which R is bonded to a silicon atom and is a monovalent aliphatic or aromatic hydrocarbon radical or the halogenated derivative of such a radical, c is 0 to 3, and d is 0.005 to 2.0, the sum of c plus d being 0.8 to 3, there being at least 2 silicon-bonded hydrogen atoms present per molecule, the ratio of silicon-bonded hydrogen in (2) to silicon-bonded ethylenically unsaturated radicals in (1) being from 1:1 to 20:1, to obtain a coating composition having a viscosity in the range of 100–1,000 cps,

d. coating a thin layer of said formulation on a self-supporting backing sheet, and

e. heating the coated sheet for a time and temperature sufficient to effect cure by reaction of the polymer and the crosslinking agent.

4,386,136

ROOF COATING COMPOSITION AND CONSTRUCTION

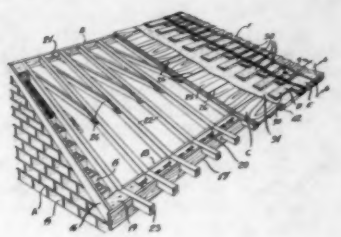
John H. Kaufmann, Somerset Parish, Bermuda, assignor to Global Coatings Limited, Hamilton, Bermuda

Division of Ser. No. 37,303, May 8, 1979, Pat. No. 4,287,241, which is a division of Ser. No. 795,888, May 11, 1977, Pat. No. 4,160,346. This application May 1, 1981, Ser. No. 259,475

Claims priority, application United Kingdom, May 11, 1976, 19410/76

Int. Cl.³ B32B *13/12*

U.S. Cl. 428—451 **2 Claims**



1. A structure having a surface to be protected, comprising:

a continuous protective sheath covering the surface and made up of a thin hard load supporting shell adhering tenaciously to the surface and having high impact flexural and tensile, and thin section strength from about 1.5 mm to about 5.00 mm thick of reinforced concrete made with hydraulic cement modified with a minor amount of a synthetic resin latex cement modifier, a fine aggregate and reinforcing material,

said shell being covered by a soft weather-resistant rubbery-textured microporous membrane adhering tenaciously to its surface having capillary openings to permit escape of moisture and having a thickness from about 0.75 mm to about 3 mm thick and laid down from a binder material of a non-plasticized latex of elastomeric type acrylic polymer filled with finely divided extender.

4,386,137

PROCESS FOR PRODUCING A GRAPHITE FLUORIDE TYPE FILM ON THE SURFACE OF AN ALUMINUM SUBSTRATE

Nobuatsu Watanabe, Nagaokakyo; Tsuyoshi Nakajima; Hiroaki Yamada, both of Kyoto, and Noboru Ohsawa, Ibaraki, all of Japan, assignors to Nobuatsu Watanabe, Nagaokakyo and Applied Science Research Institute, Kyoto, both of, Japan

Filed Dec. 15, 1981, Ser. No. 330,822

Claims priority, application Japan, Sep. 10, 1981, 56-143005; Sep. 10, 1981, 56-143006

Int. Cl.³ B32B *15/04*; C23C *13/04*

U.S. Cl. 428—457 **20 Claims**

1. A process for producing a graphite fluoride type film on the surface of an aluminum substrate which comprises heating an aluminum substrate and a carbonaceous material or polycarbon monofluoride represented by the formula $(CF)_n$ at a temperature of 450° to 600° C. for 12 to 90 hours under gas fluorine at a gas pressure of 0.01 to 0.5 atm while allowing said aluminum substrate and said carbonaceous material or polycarbon monofluoride to be in a stationary state.

11. A product produced by the process of claim 1.

4,386,138

HEAT SEALABLE PACKAGING FILM OF POLYACRYLONITRILE FILM LAMINATED WITH OLEFIN POLYMERS AND CO-POLYMERS

Harold A. Arbit, Highland Park, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 939,089, Sep. 1, 1978, abandoned. This application May 11, 1981, Ser. No. 262,659
Int. Cl.³ B32B 27/30, 27/32
U.S. Cl. 428—520 5 Claims

1. A laminate consisting of two layers consisting of corona discharge treated biaxially oriented polyacrylonitrile homopolymer film extrusion coated on one side with an olefin polymer or consisting of three layers consisting of corona discharge treated biaxially oriented polyacrylonitrile homopolymer film extrusion coated on both sides with an olefin polymer.

4,386,139

COPPER FOIL FOR A PRINTED CIRCUIT AND A METHOD FOR THE PRODUCTION THEREOF

Hiroshi Nakatsugawa, Yokohama, Japan, assignor to Furukawa Circuit Foil Co., Ltd., Tokyo, Japan

Filed Oct. 31, 1980, Ser. No. 202,661
Int. Cl.³ C25D 3/56
U.S. Cl. 428—607 14 Claims

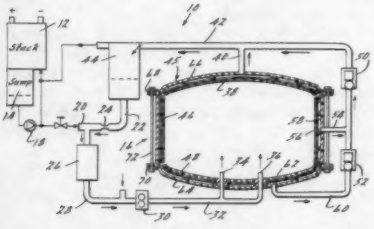
1. Copper foil for a printed circuit, which comprises a copper layer having at least one surface thereof coated with a layer consisting essentially of a vanadium-containing zinc.

4,386,140

MULTIPLE STAGE MULTIPLE FILTER HYDRATE STORE

Harry K. Bjorkman, Jr., Birmingham, Mich., assignor to Energy Development Associates, Inc., Madison Heights, Mich.

Filed Apr. 16, 1982, Ser. No. 368,892
Int. Cl.³ H01M 8/06
U.S. Cl. 429—19 50 Claims



1. In a metal halogen battery system, including at least one cell having a positive electrode and a negative electrode contacted by aqueous electrolyte containing the material of said metal and halogen, store means whereby a compressible particulate halogen hydrate is formed during the charging of said battery system from the halogen gas liberated at said positive electrode and a chilled liquid, and conduit means for transmitting said halogen gas and said liquid to a hydrate former means for forming said halogen hydrate in association with said store means, said store means being constructed in the form of a container, the improvement comprising:

multiple filter means for separating said halogen hydrate from said liquid, said filter means being constructed in the form of separate sections which combine to substantially cover the interior surface of said container;

exit conduit means in association with said filter means for transmitting the liquid passing through said filter means to said hydrate former means; and

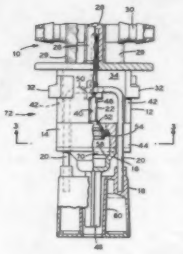
relief valve means interposed in said exit conduit means for controlling the operation of said separate sections of said filter means, such that the liquid flow through said exit conduit means from each of said separate sections is controlled in a predetermined sequence.

4,386,141

WATERING DEVICE FOR BATTERIES

Evert C. Weidner, Lansdale, and William B. Brecht, Hatfield, both of Pa., assignors to Exide Corporation, Philadelphia, Pa.

Filed Feb. 22, 1982, Ser. No. 351,048
Int. Cl.³ H01M 2/00
U.S. Cl. 429—64 12 Claims



1. A watering device for maintaining a predetermined electrolyte level in a cell, the device having a central axis and comprising a plug body having a cover and a valve chamber disposed within the plug body, a valve disposed within the plug body, the valve including a valve head, the valve head disposed within the valve chamber, the valve chamber including an upper valve seat and a lower valve seat, an O-ring circumscribing the valve head, the O-ring movably disposed between the upper valve seat and the lower valve seat to create a positively closed and a positively opened valve position respectively, means for introducing water into the valve chamber, means for introducing the water from the valve chamber into the cell, means for permitting gas to exit from the cell, and float means in movable communication with the valve and the electrolyte.

4,386,142

SURFACE TREATMENT OF SEMICONDUCTOR MATERIALS

Gary Hodes; Joost Manassen, and David Cahen, all of Rehovot, Israel, assignors to Yeda Research and Development Company, Rehovot, Israel

Filed Oct. 14, 1980, Ser. No. 196,481
Claims priority, application Israel, Oct. 11, 1979, 58441
Int. Cl.³ H01M 6/36; H01L 31/00
U.S. Cl. 429—111 29 Claims

1. A process for pretreating the surface of a metal chalcogenide semiconductor body for use in a cell wherein said chalcogenide is selected from the group consisting of sulfur, selenium, and tellurium, said process comprising the steps of:

(a) immersing said metal chalcogenide semiconductor body in a suitable electrolyte, said electrolyte being selected such that said metal chalcogenide semiconductor body is relatively stable therein in the dark, but unstable as a photoelectrode under illumination;

(b) providing a connection of said chalcogenide semiconductor body to an electrode;

(c) immersing said electrode along with said metal chalcogenide semiconductor body in said electrolyte;

(d) illuminating said metal chalcogenide semiconductor body to photoelectrochemically etch said metal chalcogenide semiconductor body, thus improving the surface electronic properties of said metal chalcogenide semiconductor body;

(e) removing said metal chalcogenide semiconductor body

from said electrolyte after achieving a maximum improvement of the surface electronic characteristics by the photoelectrochemical etch process of step (d); and

(f) inserting the metal chalcogenide semiconductor body of step (e) into said cell as a component thereof.

10. A photoelectrochemical cell comprising an electrolyte and a metal chalcogenide electrode produced by the process of claim **1**.

4,386,143

MULTICOLOR OPTICAL FILTERS AND PROCESS FOR PRODUCING THE SAME

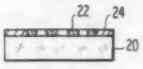
Masamichi Sato, and Kenji Matsumoto, both of No. 105, Oazamizonuma, Asaka-shi, Saitama, Japan

Continuation-in-part of Ser. No. 52,704, Jun. 28, 1979, Pat. No. 4,271,246. This application Nov. 26, 1980, Ser. No. 211,538

Claims priority, application Japan, Nov. 26, 1979, 54-153358

Int. Cl.[3] **G03F** *5/00*

U.S. Cl. 430—7 **6 Claims**



1. A multicolor optical filter comprising one hydrophilic binder layer resulting from fixation of a black-and-white silver halide emulsion layer on a base, wherein at least two color dye patterns are formed in said binder layer, which color dye patterns are free of silver and silver halide, and at least one optical black area comprising silver or silver and a dye formed in said one binder layer, which at least one optical black area is separate and distinct from said at least two color dye patterns.

4,386,144

PROCESS FOR THE PRODUCTION OF MULTICOLOR OPTICAL FILTERS

Toshiaki Aono, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 24, 1981, Ser. No. 295,285

Claims priority, application Japan, Aug. 23, 1980, 55-116087

Int. Cl.[3] **G03C** *7/16*

U.S. Cl. 430—7 **8 Claims**

CYAN COUPLER	EMULSION LAYER (L2)
YELLOW COUPLER	EMULSION LAYER (L1)
SUPPORT	

1. A process for producing a multicolor optical filter, comprising the steps of:

(1) exposing a light-sensitive material including:

(M-a) a silver halide emulsion layer (L1) containing:

a compound (1*b*) capable of forming a dye having any one of the subtractive process three principal colors in proportion to the amount of exposure by development processing, or

a dye (1*c*) having any one of the subtractive process three principal colors, and capable of losing the color in proportion to the amount of exposure by development processing; and

(M-b) a silver halide emulsion layer (L2) containing:

a silver halide emulsion (2*a*) having a sensitivity sufficient to reach a state at which further development does not proceed when it is exposed to an amount of exposure at which no imagewise development occurs in the emulsion layer (L1); and

when compound (1*b*) is contained in layer (L1), a compound (2*b*) capable of forming a dye which has a color of the subtractive process three principal colors other than the color of the dye resulting from the compound (1*b*) contained in emulsion layer (L1) by development processing; or, when compound (1*c*) is contained in layer (L1), a dye (2*c*) having a color of the subtractive process three principal colors other than that of the dye (1*c*) contained in the emulsion layer (L1), and capable of losing the color in proportion to the amount of exposure by development processing;

wherein said light-sensitive material has a surface divided into a number of areas, and said exposure is performed such that

(a) some of the areas are unexposed, or are exposed only to an extent that no imagewise development occurs in the emulsion layer (L2);

(b) some of the areas are exposed to the extent that further development does not proceed in the emulsion layer (L2), but no imagewise development occurs in the emulsion layer (L1); and

(c) the remaining areas are exposed to the extent that further development does not proceed in the emulsion layer (L1); and

(2) developing the exposed light-sensitive material.

4,386,145

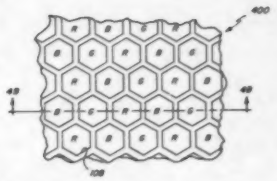
FABRICATION OF ARRAYS CONTAINING INTERLAID PATTERNS OF MICROCELLS

Hugh S. A. Gilmour, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 192,976, Oct. 1, 1980, abandoned. This application May 6, 1982, Ser. No. 375,423

Int. Cl.[3] **G03C** *1/76;* **B32B** *3/12;* **B23K** *9/00;* **B05D** *3/06*

U.S. Cl. 430—7 **27 Claims**



1. In a process comprising

forming in a support having first and second major surfaces a planar array of microcells opening toward the first major surface and

selectively altering the contents of a first set of the microcells in relation to a second, interlaid set of the microcells,

the improvement comprising selectively altering the contents of the microcells by

positioning to overlie the first major surface, means for closing both the first and second sets of microcells and

selectively removing the closing means from the first set of microcells to permit selectively altering the contents of the first set of microcells without concurrently altering the contents of the second set of microcells.

17. In a process comprising

forming in a support having first and second major surfaces a planar array of microcells opening toward the first major surface and

introducing into an interlaid pattern of first, second and third sets of microcells blue, green, and red filters, respectively,

the improvemet comprising

positioning an organic film-forming membrane to close the microcells opening toward the first major surface,

laser addressing the membrane to open the first set of microcells, and

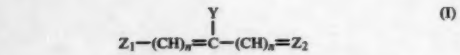
aligning a radiation-sensitive imaging means adjacent the microcells containing the blue, green, and red filters.

4,386,146
DYE SENSITIZED TITANIUM DIOXIDE ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MATERIALS

Shigeru Kishino; Shigeo Yasui, both of Okayama; Kei Takahata, and Masakuni Ohkawa, both of Moriyama, all of Japan, assignors to Ishihara Sangyo Kaisha, Ltd., Osaka, Japan

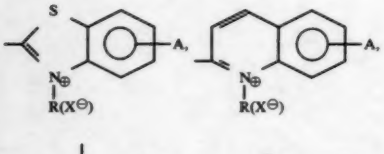
Filed Oct. 20, 1981, Ser. No. 312,978
Claims priority, application Japan, Oct. 23, 1980, 55-148550
Int. Cl.³ G03G 5/09
U.S. Cl. 430—95 **18 Claims**

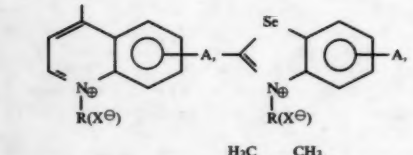
1. An electrophotographic photosensitive material comprising an electroconductive substrate having positioned thereon a photosensitive layer comprising as main components titanium dioxide and a binding materials, characterized in that said photosensitive layer contains at least one cyanine dye represented by the general formula (I)

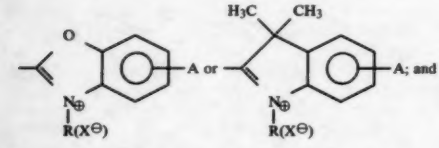


(I)

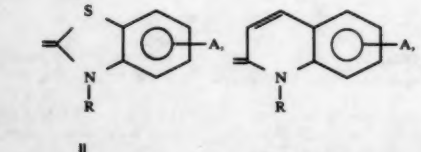
wherein Y is a hydrogen atom, a halogen atom or an alkyl group; n is an integer of 1 to 3; Z_1 is

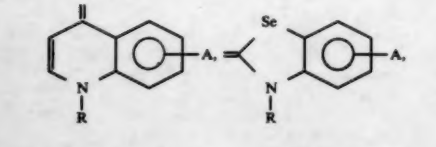






Z_2 is





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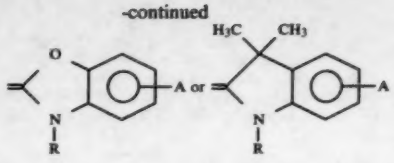


in which R is a carboxyalkyl group, a sulfoalkyl group or a salt or anion thereof, a hydroxyalkyl group, or an alkyl group; A is a hydrogen atom; a halogen atom, a hydroxyl group; an alkyl group, an alkoxy group, an alkoxycarbonyl group, a carboxyl group or a salt or anion thereof, a phenyl group, or an atomic group forming an aromatic hydrocarbon six-membered ring in conjunction with the carbon atoms in the 4- and 5-positions, the 5- and 6-positions or the 6- and 7-positions of the ring; provided that when the R groups in both Z_1 and Z_2 are alkyl groups, the A groups in at least one of Z_1 and Z_2 are carboxyl groups or salt or anions thereof; and $X^{\ominus}$ is the acid anion residue which exists only where the nitrogen atom in the ring is a cation center and neither R nor A forms an anion, the amount of cyanine dye being 0.001 to 0.3% by weight based on the weight of titanium dioxide.

4,386,147
TONER FOR DEVELOPING ELECTROSTATIC LATENT IMAGES

Ryubun Seimiya; Yutaka Yamada; Makoto Tomono; Noriyoshi Tarumi, all of Hachioji; Yasuyuki Fujisaki, Osaka; Minoru Takahashi, Osaka; Hiroshi Ogawara, Osaka, and Hirozo Funaki, Osaka, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Division of Ser. No. 211,894, Dec. 1, 1980, abandoned, which is a continuation of Ser. No. 789,941, Apr. 22, 1977, abandoned, which is a continuation-in-part of Ser. No. 566,227, Apr. 9, 1975, abandoned. This application Nov. 12, 1981, Ser. No. 320,188
Claims priority, application Japan, Apr. 10, 1974, 49-41223
Int. Cl.³ G03G 9/08, 13/25
U.S. Cl. 430—99 **7 Claims**

1. A method of fixing a toner image on a sheet bearing said toner image comprising passing said sheet between heated fixing rollers, the toner image consisting essentially of a toner which comprises a colorant and a resin, said resin containing at least 60% by weight, based on the weight of said resin, of at least one polymer selected from the group consisting of (a) a copolymer of an aromatic vinyl monomer with at least one other α-methylene aliphatic monocarboxylic acid ester and (b) a copolymer wherein all of the monomers are α-methylene aliphatic monocarboxylic acid esters, said polymer having a weight average molecular weight (Mw)/number average molecular weight (Mn) ratio of from 3.5 to 40 wherein the number average molecular weight (Mn) is between about 2,000 and about 30,000.

4,386,148
PROCESS FOR IMPROVING THE PHOTOELECTRIC PROPERTIES OF A LAMINATED CHARGE IMAGE CARRIER

Hans Camenisch, Chur; Jarmila Bachner, Egg, and Wolfgang F. Berg, Forch, all of Switzerland, assignors to Elfotec A.G., Zumikon, Switzerland

Division of Ser. No. 546,816, Feb. 3, 1975, Pat. No. 4,307,166. This application May 8, 1981, Ser. No. 262,009
Claims priority, application Fed. Rep. of Germany, Feb. 1, 1974, 2404921
The portion of the term of this patent subsequent to Dec. 22, 1998, has been disclaimed.
Int. Cl.³ G03G 5/04, 5/08
U.S. Cl. 430—131 **2 Claims**

1. A process of improving the photoelectric properties of a

laminated charge image carrier provided with an insulating layer between a substrate and a photoconductive ZnO layer, wherein the photoconductive ZnO layer is prepared from a coating composition containing at least one sensitizer, comprising the steps of:

(A) preparing a coating composition containing an insulating material,

(B) doping the coating composition by admixing between 1000 and 5000 ppm of said at least one sensitizer to the coating composition for the insulating layer,

(C) applying a coating of the doped coating composition to the substrate to form a doped insulating layer, and

(D) applying on said doped insulating layer a photoconductive layer comprising ZnO photopigment and the said at least one sensitizer.

4,386,149

PROCESS FOR THE PRODUCTION OF PHOTOGRAPHIC IMAGES BY DYE DIFFUSION TRANSFER AND PHOTOGRAPHIC MATERIAL SUITABLE IN THIS PROCESS

Leslie F. A. Mason, Brentwood; Rainer Kitzing, Ingatestone; Brian R. D. Whitear, Brentwood; William E. Long, Brentwood; Glenn P. Wood, Brentwood, and David L. R. Reeves, Brentwood, all of England, assignors to Ciba-Geigy AG, Basel, Switzerland

Division of Ser. No. 14,776, Feb. 23, 1979, Pat. No. 4,269,928. This application Feb. 13, 1981, Ser. No. 235,352

Claims priority, application United Kingdom, Feb. 28, 1978, 7789/78; Oct. 13, 1978, 40401/78; Oct. 30, 1978, 42414/78; Nov. 20, 1978, 45305/78

Int. Cl.³ G03C *1/48*

U.S. Cl. 430—213 **10 Claims**

1. Photographic material which comprises in order optionally a supercoat layer, at least one silver halide emulsion layer, a dye mordant layer and a support base, there being associated with the silver halide emulsion layer a compound of the general formula

$$D\text{-}N{=}CR_{17}\text{—}BAL \text{ or} \quad (60)$$

an amino compound of formula

$$D\text{—}N(R_{18})\text{—}CR_{17}R_{19}\text{—}BAL, \quad (61)$$

wherein D represents a diffusible dye residue, BAL represents a ballasting group and R_{17}, R_{18} and R_{19} each represent hydrogen or alkyl with 1 to 3 carbon atoms.

4,386,150

NOVEL IMAGE DYE-PROVIDING MATERIALS AND PHOTOGRAPHIC PRODUCTS AND PROCESSES

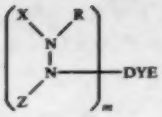
Stephen R. Herchen, Duxbury, and Gary N. Widiger, Lexington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 18, 1981, Ser. No. 331,995

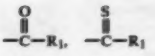
Int. Cl.³ G03C *1/40, 1/10, 5/54*

U.S. Cl. 430—222 **22 Claims**

11. A photosensitive element comprising a support, a silver halide emulsion in a layer carried by said support and an image dye-providing material in a layer carried by said support on the same side thereof as said silver halide emulsion, said image dye-providing material containing at least one diffusion control moiety which is capable of providing a diffusible image dye containing the chromophoric system represented by the formula



wherein X is



or $—SO_2—R_1$; Z is H, alkyl or aryl, R is H, alkyl or aryl; provided that Z and R are not both H; DYE is a dye moiety; R_1 is H, alkyl, aryl $—NH_2$, $—NHR_2$,

or $—OR_2$; R_2 is H, alkyl or aryl; and m is 1 or 2.

19. A diffusion transfer color film unit comprising:

(a) a photosensitive element as defined in claim 11;

(b) a second sheet-like element adapted to be superposed on said photosensitive element during or after photoexposure;

(c) an image-receiving layer positioned in one of said photosensitive or sheet-like elements; and

(d) a rupturable container releasably holding an aqueous alkaline processing composition and so positioned as to be adapted to distribute said processing composition between predetermined layers of said elements.

4,386,151

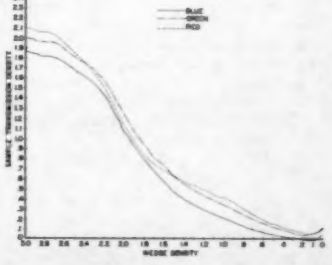
DIFFUSION TRANSFER FILM SYSTEM WITH PROTECTIVE LAYER OF COPPER SALT, CHITOSAN AND SELECTED POLYOLS

Michael Berger, Chestnut Hill, Mass.; Charles H. Byers, Oak Ridge, Tenn., and John J. Magenheimer, Wellesley, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 277,946, Jun. 26, 1981, abandoned. This application Jul. 22, 1982, Ser. No. 400,906

Int. Cl.³ G03C *5/54, 1/48, 7/00*

U.S. Cl. 430—228 **25 Claims**



1. A silver diffusion transfer film unit which comprises a support carrying, in order, a layer comprising silver precipitating nuclei; a protective layer comprising a water soluble copper salt, chitosan and a polyol selected from the group consisting of glycerol, sorbitol, polyvinyl alcohol, inositol, ethylene

glycol, propylene glycol and hydroxyethyl cellulose; a release layer; and a photosensitive silver halide emulsion layer.

2. The film unit of claim 1 wherein said support is transparent.

4. The film unit of claim 2 which includes an additive color screen.

4,386,152

PLASMA DEVELOPABLE ELECTRON RESIST PROCESS

Juey H. Lai, Burnsville, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 19, 1981, Ser. No. 275,553
Int. Cl.³ G03C 5/24
U.S. Cl. 430—269 15 Claims

1. A method of fabricating an electron resist pattern comprising the steps of

applying a coating of a negative electron resist film material comprising a mixture of an aliphatic vinyl base polymer having a relatively high plasma etch rate and a monomer having a relatively low plasma etch rate to a substrate, said monomer being one selected from the group consisting of vinyl stearate, methacrylamide, N-t-butyl acrylamide, p-vinylacetanilide, N-vinylcarbazole and diphenylacetylene;

applying a coating of a barrier polymer film over said negative electron resist film to prevent vacuum sublimation of said monomer, wherein said barrier polymer is one which is soluble in a solvent which is not a solvent for said base polymer or said monomer;

exposing said negative electron resist film to an electron beam describing a predetermined pattern;

dissolving away said coating of barrier polymer;

baking said resist film prior to development thereof; and

developing said exposed resist pattern by plasma etching.

4,386,153

LIGHT-SENSITIVE PHOTOPOLYMERIZABLE COMPOSITION

Fumiaki Shinozaki; Yasuo Washizawa; Tomoaki Ikeda; Sho Nakao, and Syunichi Kondoh, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 57,149, Jul. 12, 1979, Pat. No. 4,298,679, which is a division of Ser. No. 832,864, Sep. 13, 1977, Pat. No. 4,175,971. This application Mar. 4, 1981, Ser. No. 240,433
Claims priority, application Japan, Sep. 14, 1976, 51-110151
Int. Cl.³ G03C 1/68
U.S. Cl. 430—285 4 Claims

1. A light-sensitive composition consisting essentially of at least one ester of an ethylenically unsaturated double bond-containing organic acid and an aliphatic polyhydric alcohol, said ester having a molecular weight of about 1000 or less, and a photopolymerization initiator, said photopolymerization initiator consisting essentially of a combination of the components

(1) benzanthrone, a benzanthrone substituted with one or more of halogen atoms, alkyl groups having 1 to 5 carbon atoms or alkoxy groups having 1 to 5 carbon atoms, a 1,2-benzanthraquinone or a benzanthraquinone substituted with one or more of halogen atoms, alkyl groups having 1 to 5 carbon atoms or alkoxy groups having 1 to 5 carbon atoms, or a mixture thereof and

(2) a compound represented by the following general formula (b):

(b)

wherein R and R', which may be the same or different, each represents a methyl group or an ethyl group, and R^0 represents a hydrogen atom, a hydroxy group, a $—CR^1R^2R^3$ group, wherein R^1, R^2 and R^3, which may be the same or different, each represents a hydrogen atom or an alkyl group having 1 to 3 carbon atoms or an $—OR^4$ group, wherein R^4 represents an alkyl group having 1 to 5 carbon atoms, wherein the weight ratio of component (1) to component (2) of said photopolymerization initiator ranges from about 10:1 to about 1:100 and the amount of said photopolymerization initiator ranges from about 0.1 to about 20% by weight to the weight of the ester.

4,386,154

VISIBLE LIGHT SENSITIVE, THERMALLY DEVELOPABLE IMAGING SYSTEMS

George H. Smith, St. Paul, and Peter M. Olofson, Oakdale, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 26, 1981, Ser. No. 247,834
Int. Cl.³ G03C 1/52
U.S. Cl. 430—336 9 Claims

1. An imageable layer comprising a binder, at least one leuco dye selected from an acylated azine, phenoxazine, or phenothiazine leuco dye, nitrate ion, a diaryliodonium salt photoinitiator, and a visible light sensitizing dye for said photoinitiator.

4,386,155

PROCESS FOR THE PRODUCTION OF PHOTOGRAPHIC IMAGES

Peter Bergthaller, Cologne; Friedrich-Wilhelm Kunitz, Leverkusen; Karl-Wilhelm Schranz, Odenthal, and Erich Wolff, Solingen, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Sep. 3, 1981, Ser. No. 298,999
Claims priority, application Fed. Rep. of Germany, Sep. 9, 1980, 3033861
Int. Cl.³ G03C 7/00, 5/38
U.S. Cl. 430—372 3 Claims

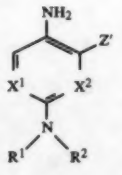
1. The process of producing color photographic images consisting of metal complexed azomethine dyes by the chromogenic development of an imagewise exposed color photographic recording material containing at least one silver halide emulsion layer, comprising the steps of

(a) oxidizing a color developer compound containing a primary amino group and present in uniform distribution by development of silver halide which has been imagewise exposed;

(b) coupling the oxidized color developer compound with a color coupler present in uniform distribution to produce a dye image consisting of an azomethine dye; and

(c) reacting the azomethine dye with a metal salt to form an azomethine dye metal complex

in which the color developer compound used corresponds to the general formula



in which

X^1 and X^2 each represents a nitrogen atom or a methine group;

Z' represents a group capable of metal chelate formation; and

R^1 and R^2 each represents alkyl or R^1 or R^2 together represent the radical required to complete a cyclic amino group; and the azomethine dye is reacted with a metal salt of a metal of the Ist to VIth Main Group or of the Ist, IInd

or IVth to VIIIth Secondary Group of the Periodic System of Elements.

4,386,156

SILVER BROMIDE EMULSIONS OF NARROW GRAIN SIZE DISTRIBUTION AND PROCESSES FOR THEIR PREPARATION

Andre G. E. Mignot, Bonneuil-sur-Marne, France, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 12, 1981, Ser. No. 320,912
Int. Cl.³ G03C 1/02
U.S. Cl. 430—567 20 Claims

1. A radiation-sensitive emulsion comprised of a dispersing medium and silver bromide grains, wherein tabular silver bromide grains bounded by two substantially parallel square or rectangular major crystal faces and having an average aspect ratio of at least 8.5:1 account for at least 50 percent of the total projected surface area of the silver bromide grains present in the emulsion.

4,386,157

METHOD FOR DETECTING COLIFORM ORGANISMS

James M. Beggs, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Kenji Nishioka, Redwood City; David A. Nibley, Mountain View, both of Calif.; Eldon L. Jeffers, La Porte, Tex., and Richard L. Brooks, Mountain View — Calif.

Filed Oct. 26, 1981, Ser. No. 315,278
Int. Cl.³ C12Q 1/06, 3/00, 1/04, 1/10
U.S. Cl. 435—39 6 Claims

1. A method of determining the concentration of a hydrogen producing bacteria contained in a sample comprising the steps of:

introducing the sample into a liquid growth medium contained in a first cell;

culturing the bacteria contained in the sample by maintaining the temperature at a preselected value such that metabolically produced hydrogen is evolved by the growth of the bacteria;

venting the evolved hydrogen into a buffer solution maintained at a predetermined temperature and contained in a second cell so that the hydrogen is dissolved in the buffer solution;

detecting a change in potential between a measuring electrode and a reference electrode in contact with the buffer solution resulting from the dissolved hydrogen;

measuring the time period between the introduction of the sample into the first cell and the detecting of a change in potential; and

determining the concentration of the bacteria in the sample based on said detecting and measuring steps.

4,386,158

METHOD OF PRODUCING PALATINOSE WITH IMMOBILIZED ALPHA-GLUCOSYL TRANSFERASE

Junichi Shimizu, Yokohama; Kazumasa Suzuki, Ayase, and Yoshikazu Nakajima, Yamato, all of Japan, assignors to Mitsui Sugar Co., Ltd., Tokyo, Japan

Filed Aug. 12, 1981, Ser. No. 292,178
Claims priority, application Japan, Aug. 21, 1980, 55-113982
Int. Cl.³ C12P 19/18, 19/12; C12N 11/02, 11/10, 11/04
U.S. Cl. 435—97 2 Claims

1. A method of producing palatinose which comprises forming calcium alginate gel granules having entrapped therein cells of bacteria containing α-glucosyl transferase, which forms palatinose from sucrose immersing the granules in a polyethyleneimine solution neutralized to a pH of 5.0–5.9 to permeate polyethyleneimine into the granules until the concentration of polyethyleneimine in the gel becomes 0.5–1.5%, treating the granules with a glutaraldehyde solution containing glutaraldehyde in an amount of 1.5–5 times the amount of polyethyleneimine in the gel to form immobilized α-glucosyl transferase, and producing palatinose from sucrose using the immobilized α-glucosyl transferase.

4,386,159

METHOD OF PRODUCING METHANE

Masakuni Kanai, No. 1-5-601, Arai 1-chome, Nakano-ku, Tokyo-to, Japan

Filed Jan. 14, 1981, Ser. No. 225,105
Int. Cl.³ C12P 5/02
U.S. Cl. 435—167 13 Claims

1. Method of producing methane by fermentation of organic material, which comprises finely grinding an organic material having a C/N ratio in the range of about 12–16:1 to an average particle size of less than 3 mm, mixing the finely ground organic material in a fermentation tank and effecting fermentation in a sole fermentation step with a fermentation sufficient amount of an aqueous seed sludge containing bacteria which decomposes said organic material to methane to form a liquid mixture and maintaining the thus obtained liquid mixture in said fermentation tank during said fermentation without agitation in a CO_2 atmosphere substantially free of oxygen, said atmosphere obtained by force charging CO_2 above the surface of the liquid mixture at a temperature which promotes decomposition of said organic material by said bacteria to produce methane while maintaining a pH of between about 7.4 and 8.0, whereby a top scum layer is formed below which is a layer of the finely ground organic material said organic material being decomposed by the bacteria to methane.

4,386,160

THERMAL DESTABILIZATION OF BACILLUS SERINE PROTEASES

Sven Branner-Jorgensen, Charlottenlund, Denmark, assignor to Novo Industri A/S, Denmark

Continuation-in-part of Ser. No. 973,937, Dec. 28, 1978, Pat. No. 4,255,454. This application Mar. 9, 1981, Ser. No. 241,852
Claims priority, application Denmark, Jun. 23, 1980, 2674/80
The portion of the term of this patent subsequent to Mar. 10, 1998, has been disclaimed.
Int. Cl.³ C12N 9/54, 9/96, 9/50, 9/56
U.S. Cl. 435—221 10 Claims

1. A method for reducing the thermal stability of Bacillus serine protease by acylation, comprising acylating said protease with an acyl radical of a monocarboxylic or dicarboxylic acid of about 1 to 6 carbon atoms to a reduced thermal stability of at least about 3° C. and having at least about 50% of the proteolytic activity before acylating.

4,386,161
PROCESS FOR THE PREPARATION OF INCOAGULABLE BLOOD BY MEANS OF PROTEOLYTIC ENZYMES AND PROTEIN CONCENTRATE PREPARED THEREFROM

Giovanni B. Quaglia, and Angelo Massacci, both of Rome, Italy, assignors to Consiglio Nazionale Delle Ricerche, Rome, Italy

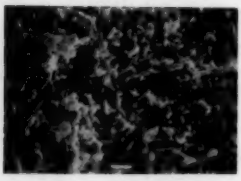
Filed Apr. 20, 1981, Ser. No. 255,566
Claims priority, application Italy, Jan. 23, 1981, 19292 A/81
Int. Cl.³ C07G 7/00
U.S. Cl. 435—269 **6 Claims**

1. A process for rendering blood incoagulable which consists of treating said blood before coagulation sets in with a proteolytic enzyme which is a member selected from the group consisting of papain, fibrinolysin, plasmin, bromelin and trypsin, as soon as it has been collected at a pH of 7–7.5, the ratio between the enzyme and the proteolytic substrate is 2:100, the enzyme solution is of 1.6% concentration, the ratio by volume of the enzyme solution to blood is 1:10, and allowing partial hydrolysis to occur just sufficient to render said blood incoagulable.

4,386,162
ALKALI METAL, CALCIUM FLUOROSILICATE GLASS-CERAMIC ARTICLES

George H. Beall, Big Flats, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Oct. 5, 1981, Ser. No. 308,143
Int. Cl.³ C03C 3/22, 3/04
U.S. Cl. 501—3 **2 Claims**



1. A highly crystalline glass-ceramic article exhibiting high toughness and a modulus of rupture in excess of 20,000 psi, wherein the predominant crystal phase is canasite and/or agrellite and/or fedorite, and having an overall composition consisting essentially, expressed in terms of weight percent on the oxide basis, of about

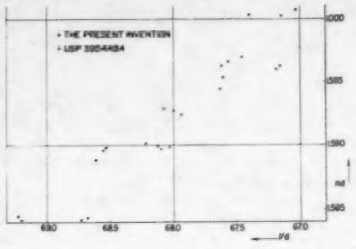
	SiO_2	45–75
	CaO	8–30
	F	3.5–12
	Na_2O	3–15
	K_2O	0–20
Na_2O +	K_2O	5–25
	B_2O_3	0–6
	Al_2O_3	0–7
	ZrO_2	0–12

4,386,163
FLUOROPHOSPHATE OPTICAL GLASS

Hiroyuki Kodama, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Dec. 28, 1981, Ser. No. 334,571
Claims priority, application Japan, Jan. 20, 1981, 56/5948
Int. Cl.³ C03C 3/16, 3/18
U.S. Cl. 501—44 **4 Claims**

1. A fluorophosphate optical glass having an index of refraction nd within the range of 1.58–1.70, an Abbe number vd within the range of 39–70, and a relatively high positive anomolous partial dispersion, which results from fusion of a batch of glass-forming compounds having the following ranges of composition in percent by weight consisting essentially of:



(a) metaphosphate raw material:

$Al(PO_3)_3$	18.0–28.0 wt. %
$Mg(PO_3)_2$	0 wt. %
$Ca(PO_3)_2$	1.0–10.0 wt. %
$Ba(PO_3)_2$	10.0–15.0 wt. %

wherein the total amount of metaphosphate raw materials is 33–44 percent by weight,

(b) fluoride raw material:

MgF_2	2.0–10.0 wt. %
SrF_2	0 wt. %
BaF_2	1.0–33.0 wt. %
AlF_3	2.0–8.0 wt. %
YF_3	0 wt. %

wherein the total amount of fluoride raw materials is 19–36 percent by weight,

(c) oxide raw material:

BaO	14.0–35.0 wt. %
Y_2O_3 and/or Yb_2O_3	1.5–5.0 wt. %
ZnO	0 wt. %
PbO	0–29.0 wt. %
Nb_2O_5	0–22.0 wt. %

wherein the total amount of oxide raw materials is 30–39 percent by weight.

4,386,164
BARIUM-FREE TYPE I, CLASS B LABORATORY SODA-ALUMINA-BOROSILICATE GLASS

Herbert S. Moser, Vineland, N.J., assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 14, 1981, Ser. No. 330,741
Int. Cl.³ C03C 3/08
U.S. Cl. 501—66 **4 Claims**

1. A barium-free Type I, Class B laboratory glass according to the standard specification set forth in ASTM E 438–80a having a linear coefficient of expansion (0° to 300° C., $cm/cm-°C. \times 10^{-7}$) of about 48 to 56 and having a chemical durability, maximum titration equivalent of: 0.02 N H_2SO_4/10 g of glass of 1.0 ml, the composition consisting essentially of the following ingredients in approximate percent by weight:

Ingredient	Percent
SiO_2	70–74
B_2O_3	9–13

-continued

Ingredient	Percent
Al_2O_3	5–8
Na_2O	5–8
K_2O	0–4
CaO	0–3
MgO	0–1

the glass composition having an annealing point of about 550° C. to 585° C., a softening point of about 783° to 799° C., a liquidus of about 1730° F. to 1760° F. and a Log n at the liquidus about 5.0 to 5.5.

4,386,165

STYRENIC POLYMER FOAMS AND PREPARATION THEREOF

Kyung W. Suh, Granville, Ohio, assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 156,901, Jun. 6, 1980, abandoned. This application Sep. 28, 1981, Ser. No. 306,257

Int. Cl.³ C08J 9/14

U.S. Cl. 521—79 13 Claims

1. An expandable styrenic polymer composition comprising a styrenic polymer, at least one volatile organic blowing agent, at least one non-waxy halogenated flame retarding agent and from about 0.03 to less than 2 weight percent of a waxy material melting above the foaming point of the styrenic polymer composition but below about 140° C.

4,386,166

FOAM PREPARED FROM AN UNSATURATED POLYESTER RESIN COPOLYMERIZATION MONOMER, LOW MOLECULAR WEIGHT POLYOL, AND ISOCYANATE

Gregory P. Peterson, Wheaton, and Alan D. Hamilton, Aurora, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed May 7, 1981, Ser. No. 261,735

Int. Cl.³ C08G 18/14

U.S. Cl. 521—99 10 Claims

1. A process of producing a modified polyester foam having a density of 0.5 to 40 pounds per cubic foot comprising mixing on a weight basis a polyol composition A comprising

unsaturated polyester resin dissolved in a copolymerizable monomer containing 30–80% non-volatile matter on a weight basis,

at least one urethane reaction catalyst,

at least one polyisocyanate trimerization catalyst,

at least one organic compound functional as a peroxide decomposition catalyst,

at least one low molecular weight polyol, and

at least one silicone surface active agent, and an isocyanate composition B comprising a polyisocyanate,

at least one organic peroxide functional as an unsaturated polyester resin curing catalyst, and

a urethane reaction catalyst,

at least one of compositions A and B containing a blowing agent,

and allowing said mixture to cream and foam as a result of the heat generated by the trimerization of the polyisocyanate and the urethane reaction between isocyanate groups and hydroxyl groups in the polyols and unsaturated polyester, said heat being sufficient to cause gas generation from the blowing agent and cross-linking of the unsaturated polyester with the copolymerizable monomer.

4,386,167

POLYISOCYANURATE POLYMER CONTAINING PENDANT UREA GROUPS, POLYOL DISPERSIONS AND POLYURETHANE COMPOSITIONS PREPARED THEREFROM

John T. Patton, Jr., Wyandotte, and Thirumurti Narayan, Grosse Ile, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Apr. 19, 1982, Ser. No. 369,373

Int. Cl.³ C08G 18/14

U.S. Cl. 521—161 27 Claims

1. A polyisocyanurate polymer containing pendant urea groups prepared by (a) polymerizing an organic polyisocyanate in an organic solvent in the presence of an effective amount of a trimerization catalyst and an organic solvent, (b) deactivating said catalyst, and (c) reacting the residual free isocyanate groups of the polymer with ammonia or ammonium hydroxide.

4,386,168

ORGANIC FRICTION MATERIAL

Hiroto Fujimaki, Kokubunji; Shigetoshi Ajima, and Kazuhiro Watanabe, both of Iwaki, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 27, 1982, Ser. No. 382,729

Claims priority, application Japan, Jun. 10, 1981, 56-89032

Int. Cl.³ C08L 61/06

U.S. Cl. 523—155 5 Claims

1. An organic friction material comprising 5 to 25% by volume of metal fiber, 3 to 40% by volume of activated carbon, 3 to 15% by volume of carbon fiber, 7 to 47% by volume of an organic or inorganic filling material and 10 to 30% by volume of phenolic resin.

4,386,169

POLYMER MATRICES REINFORCED WITH CALCIUM CARBONATE PARTICULATES

Andre Artur, Nancy; Alain Debut, Varangeville, and Pierre Canard, Versailles, all of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Apr. 21, 1981, Ser. No. 256,047

Claims priority, application France, Apr. 21, 1980, 80 08852

Int. Cl.³ C08K 3/26, 5/42, 5/09

U.S. Cl. 523—200 17 Claims

1. In a composition of matter comprising a polyvinyl chloride resin and a reinforcing amount of filler material therefor, the improvement which comprises, as said filler material, calcium carbonate particulates which are surface area treated with an impact strength enhancing amount of both (i) a sulfonic acid or salt thereof, and (ii) a fatty acid or salt thereof, said calcium carbonate particulates having a particle size ranging from 0.05 N to 10 N, and a BET specific surface ranging from 50 m^2/g to 0.2 m^2/g.

4,386,170

CURABLE FLUORINATED SILICONE ELASTOMER

Carl M. Monroe, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Oct. 31, 1980, Ser. No. 202,804

Int. Cl.³ C08L 83/06, 83/08

U.S. Cl. 523—210 9 Claims

1. A curable fluorinated silicone elstomeric composition consisting essentially of

(a) 100 parts by weight of polydiorganosiloxane gum having from 45 to 50 percent of the organic radicals being 2-(perfluoroalkyl)ethyl radicals in which the perfluoroalkyl radical has from 1 to 4 inclusive carbon atoms, from 50 to 55 percent of the organic radicals being selected from the group consisting of monovalent hydrocarbon radicals having from 1 to 6 carbon atoms, from 0.1 to 1 percent of the monovalent hydrocarbon radicals having aliphatic unsaturation,

(b) from 20 to 65 parts by weight of reinforcing silica filler having a surface area of at least 150 m^2/g, said silica being treated with anticrepe-hardening agent,

(c) from 0.8 to 5 parts by weight, based on 100 parts by weight of (a) plus (b), of polytetrafluoroethylene powder, and

(d) sufficient means for curing to fully cure, said composition, after curing, having improved retention of physical properties after exposure to hot fuel, hot petroleum oil, and hot air.

4,386,171

PAINT FORMULATION AND METHOD

Thomas Graham, Clitheroe; Frank B. Redman, Edgeworth, and Cyril J. Surtees, Darwen, all of England, assignors to Reed International Limited, London, England

Filed Jun. 9, 1981, Ser. No. 272,002

Claims priority, application United Kingdom, Jun. 13, 1980, 8019402

Int. Cl.[3] C09D *3/64, 5/02*

U.S. Cl. 523—337 15 Claims

1. A paint formulation which is a dispersion of a water phase in an oil phase, said oil phase comprising a polymeric paint vehicle and organic volatiles characterised in that the water content is selected to give a solids level for the formulation of 50% to 75% by weight and which formulation (when adjusted to a viscosity of 4 poise at 20° C. with the said organic volatiles) has an organic volatiles content of less than 22% by weight and the dispersion is stabilised with titanium dioxide.

4,386,172

WATER-SWELLABLE COMPOSITION AND LEAKAGE PREVENTING MATERIAL THEREWITH

Yoshihiro Yoshioka; Hiroshi Harima, both of Hasaki, and Motokazu Nishimura, Yono, all of Japan, assignors to Kurary Isoprene Chemical Co., Ltd., Ibaraki and C. I. Kasei Co., Ltd., Tokyo, both of, Japan

Filed May 18, 1981, Ser. No. 264,564

Claims priority, application Japan, May 30, 1980, 55/72560

Int. Cl.[3] C08K *5/15*

U.S. Cl. 523—408 11 Claims

1. A water-swellable polymeric composition which comprises

(a) a hydrophilic polymer having carboxyl groups in the molecule in the form of a free carboxylic acid or in the form of an alkali metal or ammonium salt,

(b) a water-soluble epoxy compound having at least two epoxy groups in a molecule, and

(c) an aqueous dispersion of a rubbery polymer having a glass transition temperature not higher than −30° C., uniformly blended together and having been dried and heated for 30 to 300 minutes at a temperature in the range of 80° to 110° C.

4,386,173

HOT MELT CORROSION RESISTANT COMPOSITIONS CONTAINING EPOXY RESINS

Yun F. Chang, Plymouth, Mich., assignor to Ford Motor Company, Dearborn, Mich.

PCT No. PCT/US82/00527, § 371 Date Apr. 23, 1982, § 102(e) Date Apr. 23, 1982

PCT Filed Apr. 23, 1982, Ser. No. 394,734

Int. Cl.[3] C08K *5/36*

U.S. Cl. 523—453 15 Claims

1. A hot melt corrosion preventative composition, characterized in that said composition comprises:

(1). between about 10 and about 25 parts by weight of an epoxy resin-elastomer adduct mixture formed by reacting:

(a) epoxy resin (i) having a number average molecular weight ($\overline{M}_n$) between about 150 and about 2000, and (ii) having two or more reactive epoxide groups per molecule; and

(b) reactive elastomer (i) having a number average molecular weight ($\overline{M}_n$) of between about 2000 and about 10,000, (ii) having reactive functionality capable of reacting with the epoxide group of said epoxy resin, and (iii) being liquid at 20°–25° C.;

wherein (a) and (b) are combined in amounts providing between about 1.8 and about 3.0 epoxide groups of said resin for each said reactive functionality of said elastomer and reacted so as to react at least about 80% of said reactive functionality of said elastomer;

(2) between about 10 and about 25 parts by weight of microcrystalline wax; and

(3) between about 50 and about 80 parts by weight of a dispersion of a petroleum sulfonate complex in nonvolatile diluent oil, (i) said complex comprising between about 30 and about 80 weight percent of said dispersion and (ii) said oil having a boiling point above about 230° C.,

wherein the total weight of said (1), (2) and (3) is 100 parts by weight.

4,386,174

COMPOSITIONS OF MELT-PROCESSABLE POLYMERS HAVING IMPROVED PROCESSABILITY

Frederic N. Cogswell, Welwyn Garden City; Brian P. Griffin, St. Albans, and John B. Rose, Letchworth, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Nov. 17, 1980, Ser. No. 207,708

Claims priority, application United Kingdom, Nov. 30, 1979, 7941364; Nov. 30, 1979, 7941365

Int. Cl.[3] C08L *1/08;* C08G *18/00, 59/19, 83/00*

U.S. Cl. 524—27 9 Claims

1. A melt-processable polymer composition comprising at least one polymer capable of forming an anisotropic melt and at least one other melt-processable polymer characterised in that the temperature range over which the polymer can form an anisotropic melt and the temperature range over which the melt-processable polymer may be melt processed overlap, with the proviso that the other melt-processable polymer may not become melt processable until blended with the anisotropic-melt-forming polymer, the quantity of the polymer capable of forming an anisotropic melt being sufficient to reduce the melt viscosity of the composition in comparison with the melt viscosity in the absence of the anisotropic-melt-forming polymer, by at least 10%, when measured at a shear rate of 1000 sec^{-1} at a given processing temperature in the processing temperature range of the melt-processable polymer.

4,386,175

RESIN COMPOSITION

Hiroshi Kuramochi; Noriaki Nakajo; Makoto Abekura, and Jun Matsumoto, all of Ina, Japan, assignors to Kokoku Rubber Industrial Company Limited, Japan

Filed Feb. 1, 1980, Ser. No. 117,438

Claims priority, application Japan, Feb. 8, 1979, 54-12770; Feb. 8, 1979, 54-12771

Int. Cl.[3] C08L *23/16, 23/04, 25/06, 35/06*

U.S. Cl. 524—32 7 Claims

1. A resin composition, comprising a mixture of 100 parts by weight of a basic material containing from about 60 to about 90 parts by weight of a thermoplastic resin selected from the group consisting of polypropylene, polyethylene, polystyrene and acrylonitrile-butadiene-styrene and from about 10 to about 40 parts by weight of a rubber material selected from the group consisting of ethylene-propylene-diene terpolymer, nitrilebutediene rubber, styrenebutediene rubber, and polynorbornene rubber and from 15 to 40 parts by weight of a carbon black mixed with an effective amount of an addition agent containing at least one of a water-soluble organic material and a surface-active agent, said effective amount of an addition agent being capable of enhancing dry etching of a surface of said composition by a gas plasma contacting said surface, said dry etching being effective to permit adhesion of a plating on said surface.

4,386,176

THERMOPLASTIC RESIN COMPOSITION HAVING HIGH HEAT RESISTANCE

Kunio Fukuda, Chigasaki, and Hideo Kasahara, Yokohama, both of Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Filed Jul. 7, 1981, Ser. No. 281,126
Claims priority, application Japan, Jul. 17, 1980, 55-96826
Int. Cl.³ C08L 61/04, 53/02, 71/04
U.S. Cl. 525—68 10 Claims

1. A thermoplastic resin composition which has high heat resistance and comprises 5–95 wt.% of a copolymer of a vinyl aromatic compound and an imide compound of an α,β-unsaturated dicarboxylic acid having a phenyl group at N-position or a nuclear-substituted phenyl group at N-position, 5–95 wt.% of a polyphenylene ether resin and 0–90 wt.% of an impact resistance reinforcing agent.

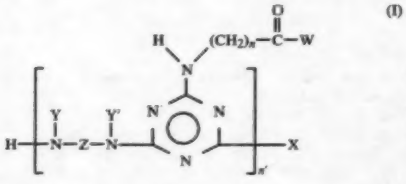
4,386,177

LIGHT STABILIZERS FOR POLYMERS CONTAINING HINDERED PIPERIDINYL-SUBSTITUTED 1,3,5 TRIAZINE GROUPS

Frank F. Loffelman, Bridgewater, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Jul. 20, 1981, Ser. No. 284,884
Int. Cl.³ C07D 401/14, 413/14; C08K 5/34, 5/35
U.S. Cl. 524—100 13 Claims

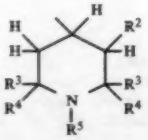
1. An oligomer of Formula I



(I)

wherein W represents C_1–C_{20} alkoxy, or

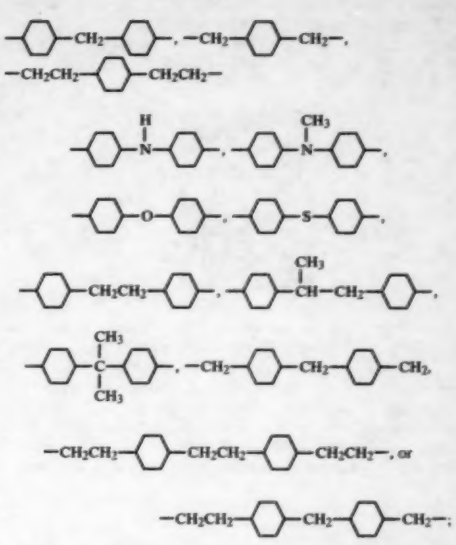
wherein R and R^1, which are the same or different, represent hydrogen or C_1–C_{18} alkyl; n is an integer from 1 to 3; Y and Y^1 which are the same or different, represent hydrogen, C_1–C_{20} alkyl, or the radical (II)



(II)

wherein R^2 represents hydrogen, C_1–C_{18} alkyl, or benzyl; R^3 and R^4 independently represent C_1–C_8 alkyl, benzyl, or phenethyl, or together with the carbon to which they are attached form a C_5–C_{10} cycloalkyl; R^5 represents hydrogen, C_2–C_3 hydroxyalkyl, C_1–C_8 alkyl, hydroxyl, or oxyl; Z represents C_2–C_{20} alkylene, either straight-chained or branched, wherein the alkylene chain may be interrupted by oxy, thio, or

radicals, wherein R^6 represents hydrogen, C_1–C_{20} alkyl, or the radical (II); C_5–C_{10} cycloalkylene,



C_6–C_{12} arylene, or C_8–C_{14} aralkylene, n' is an integer greater than 1, and X represents halo, C_1–C_8 alkylamino, di(C_1–C_8)alkylamino, pyrrolidyl, or morpholino, with the proviso that at least one moiety of formula (II) is present in the repeating unit.

6. A method for stabilizing a polymer which is normally subject to degradation by ultra-violet radiation which comprises incorporating into said polymer an ultra-violet stabilizingly effective amount of an oligomer of claim 1.

4,386,178

POLYACETALS HAVING AN IMPROVED MAXIMUM SUSTAINED-USE TEMPERATURE

Wilhelm Schuette, Speyer; Albrecht Hilt, Ludwigshafen; Manfred Walter, Speyer, and Klaus Boehlke, Hesssheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 28, 1981, Ser. No. 316,071
Claims priority, application Fed. Rep. of Germany, Nov. 24, 1980, 3044118
Int. Cl.³ C08K 5/34; C08L 61/28
U.S. Cl. 524—100 1 Claim

1. A polyacetal molding material containing an antioxidant and a heat stabilizer, which molding material is further stabilized with a melamine resin, which molding material contains from 0.1 to 10% by weight of a melamine-formaldehyde condensate which has a mean degree of polymerization of from 1.2 to 6.0 and a melamine:formaldehyde ratio of from 1:2 to 1:5.5 and which is partially etherified with a C_1–C_4-alkanol so that the ratio melamine:ether radicals is from 1:1.5 to 1:5.0 and that the ratio melamine:free methylol groups is from 1:0.5 to 1:3.

4,386,179

HYDROCARBON BLOCK COPOLYMER WITH DISPERSED POLYSILOXANE

Robert E. Sterling, New Port Richey, Fla., assignor to Medical Research Associates, Ltd., Clearwater, Fla.

Filed May 7, 1980, Ser. No. 147,475
Int. Cl.[3] C08L 25/10, 9/06
U.S. Cl. 524—269 16 Claims

1. A composition of matter comprising an elastomeric thermoplastic hydrocarbon block copolymer and polysiloxane substantially uniformly dispersed throughout said copolymer, said copolymer with said dispersed polysiloxane being elastomeric, said polysiloxane having a viscosity within the range of about 20 to 13,000 centistokes and constituting about 0.1 to 8 percent of the total weight of said composition, said composition having improved surface properties and processability as a result of the incorporation of said polysiloxane.

4,386,180

WATER-BASED STAIN

Geronimo E. Lat, Skokie, and Thomas F. Sheppard, Wheeling, both of Ill., assignors to United States Gypsum Company, Chicago, Ill.

Filed Jan. 11, 1982, Ser. No. 338,772
Int. Cl.[3] C09D 3/26, 3/42, 3/80, 15/00
U.S. Cl. 524—272 10 Claims

1. An aqueous stain comprising an acrylic latex, a drying oil, a rosin ester, a pigment, and a hydrocarbonaceous solvent, said stain further characterized by an open time of from about 1 to about 3 minutes and a tack-free drying time of from about 10 to about 15 minutes at about 160° F.

4,386,181

HEAT-AGING-RESISTANT RUBBER COMPOSITION

Teizo Kotani, Yokohama; Hiroji Enyo, Suzuka; Minoru Tanaka, Yokkaichi; Yasuhiko Takemura, Yokkaichi, and Toshio Miyabayashi, Yokkaichi, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Nov. 10, 1981, Ser. No. 320,073
Int. Cl.[3] C08K 5/06, 5/36
U.S. Cl. 524—304 11 Claims

1. A heat-aging-resistant diene rubbery polymer composition, comprising;

a rubbery polymer having an age resister incorporated therein, prepared by copolymerizing or homopolymerizing at least one monomer selected from the group consisting of butadiene, isoprene and chloroprene optionally in the presence of at least one rubber comonomer and in the presence of N-(4-anilinophenyl)-acrylamide or N-(4-anilinophenyl)-methacrylamide monomer which confers age resisting characteristics to said rubbery polymer and having admixed therewith from 0.01–10 parts by weight of a polyalkylene glycol having an average molecular weight of 100–5,000 per 100 parts by weight of said rubbery polymer.

4,386,182

THERMOPLASTIC ELASTOMERIC COMPOSITION CONTAINING VULCANIZED RUBBER PARTICLES AND SURFACTANT AND PROCESS FOR PREPARATION THEREOF

Jan W. H. Zijp, Geleen, Netherlands, assignor to Vredestein Icopro B.V., Velp, Netherlands

Filed Jul. 22, 1980, Ser. No. 171,040
Claims priority, application Netherlands, Jul. 24, 1979, 7905700
Int. Cl.[3] C08L 7/00, 9/06, 9/00, 23/06
U.S. Cl. 524—375 13 Claims

1. A non-aqueous thermoplastic elastomeric composition of (i) a comminuted vulcanized rubber having a mean particle size of below 1.5 mm, wherein said rubber is selected from the group consisting of butadiene rubber, isoprene rubber and SBR, (ii) a thermoplastic olefin or diolefin polymer constituted of lower alkene or alkadiene monomers, wherein the weight ratio of rubber to thermoplastic polymer is from 1:3 to 3:1, and (iii) a non-ionic surfactant which is the reaction product of a hydroxyl compound with an alkene oxide, and which is present in an amount of from 0.1 to 5 wt. %, calculated relative to the total quantity of the other components.

4,386,183

RELEASE COATINGS BASED ON POLYVINYL ALCOHOL

Lawrence K. Wempe, Center Valley, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Apr. 16, 1981, Ser. No. 254,833
Int. Cl.[3] C08K 3/38
U.S. Cl. 524—405 7 Claims

1. A release coating composition consisting essentially of a mixture of water and

(a) a polyvinyl alcohol,

(b) a migratable release promoting agent which is a surfactant that in a 10% aqueous polyvinyl alcohol solution at 5 weight % based on the polyvinyl alcohol provides a dried film on a glass plate having a release value of less than about 0.91 pounds per inch determined by applying a 0.004 inch coating of the surfactant modified polyvinyl alcohol solution to the glass plate, heating the coated glass plate for about 10 minutes at 120° to 125° C. to yield a dried film, applying a strip of masking tape to the film by rolling once with a 4.3 pound roller and pulling an edge of the tape away from the film at a 180° angle,

(c) a water soluble salt of a coordinating metal, and

(d) a water soluble boron compound which is selected from the group consisting of boric acid, sodium metaborate, sodium tetraborate, borax and disodium octaborate tetrahydrate.

4,386,184

COATING COMPOSITIONS COMPRISING ALLYLIC ALCOHOL INTERPOLYMERS

Irving Serlin, and Donald M. Gardner, both of Springfield, Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed May 21, 1981, Ser. No. 265,931
Int. Cl.[3] C08K 3/26, 3/10; C08L 25/06; B32B 5/16
U.S. Cl. 524—425 11 Claims

1. An electrographic coating composition comprising an intimate dispersion of a polymeric binder and from 200 to 1000 parts by weight of a finely divided non-photoconductive pigment per 100 parts by weight of the polymeric binder, wherein the polymer binder comprises an interpolymer comprising from about 40 to about 85 parts by weight of monovinyl aromatic monomer units and from about 15 to about 60 parts by weight of units of a C_3–C_7 allylic alcohol and a monocarboxylic acid, wherein the mol ratio of monovinyl aromatic units to allylic alcohol and allylic ester units is about 3:1 or less, the mol ratio of allylic ester units to allylic alcohol units is in the range of 0 to about 10, the number average molecular weight of the

interpolymer is in the range of about 700 to about 5000, the glass temperature of the interpolymer is at least about 30° C. and the solids content of the coating composition is in the range of about 40 to about 90 weight percent.

4,386,185

PHOSPHONATES AS SILICA-TO-RUBBER COUPLING AGENTS

Gary D. Macdonell, and Carl J. Stacy, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 147,404, May 6, 1980, abandoned. This application Nov. 5, 1981, Ser. No. 318,539

Int. Cl.[3] C08K 3/36

U.S. Cl. 524—566 10 Claims

1. A composition comprising a vulcanizable silica-reinforced rubber and a dihydrocarbyl mercaptohydrocarbylphosphonate coupling agent.

4,386,186

PROCESS FOR PREPARING POLYARYLATES

Louis M. Maresca, Belle Mead, and Markus Matzner, Edison, both of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 29, 1982, Ser. No. 363,099

Int. Cl.[3] C08G 63/46

U.S. Cl. 525—68 48 Claims

1. An improved process for preparing a polyarylate having a reduced viscosity of from about 0.1 to greater than 1.0 dl/g which process comprises the following steps:

(a) reacting an acid anhydride derived from an acid containing from 2 to 8 carbon atoms with at least one dihydric phenol to form the corresponding diester; and

(b) reacting said diester with at least one aromatic dicarboxylic acid at a temperature sufficient to form the polyarylate, wherein the improvement comprises carrying out said process in the presence of at least one thermoplastic polymer.

4,386,187

THERMOFORMABLE POLYMER BLEND COMPOSITION COMPRISING STYRENE POLYMER, OLEFIN POLYMER AND BLOCK COPOLYMER

Michael R. Grancio, South Hamilton; David F. Stewart, North Reading, and John F. Cass, Wakefield, both of Mass., assignors to Sweetheart Plastics, Inc., Wilmington, Mass.

Continuation-in-part of Ser. No. 158,351, Jun. 11, 1980, abandoned. This application Jan. 16, 1981, Ser. No. 225,674

Int. Cl.[3] C08L 53/02, 55/02, 25/06, 25/08

U.S. Cl. 525—96 6 Claims

1. A thermoformable polymer blend composition comprising about 54 to 82% by weight of olefin polymer, about 15 to 40% by weight of styrene polymer and about 2 to 10% by weight of a thermoplastic styrene-butadiene-styrene block copolymer rubber compatibilizer, said compatibilizer having a softness parameter of greater than about 200 psi in terms of the 300% modulus and a melt index of about 1.4 to about 22 grams/10 min. under Condition G of ASTM Test D 1238-73.

4,386,188

THERMOFORMABLE POLYMER BLEND COMPOSITION

Michael R. Grancio, South Hamilton; David F. Stewart, North Reading, and John F. Cass, Wakefield, all of Mass., assignors to Sweetheart Plastics, Inc., Wilmington, Mass.

Division of Ser. No. 225,674, Jan. 16, 1981, which is a continuation-in-part of Ser. No. 158,351, Jun. 11, 1980, abandoned. This application Feb. 24, 1982, Ser. No. 351,784

Int. Cl.[3] C08J 5/00; C08L 23/02, 53/02, 25/04

U.S. Cl. 525—96 18 Claims

1. A process for molding articles having a desired shape which comprises feeding a thermoplastic sheet formed from a polymer blend comprising at least 50% by weight of olefin polymer, from 10 to 48% by weight of styrene polymer and from 2 to 20% by weight of a thermoplastic styrene-butadiene-styrene block copolymer rubber compatibilizer, said compatibilizer having a softness parameter of greater than about 200 psi in terms of the 300% modulus and a melt index of at least about 1.4 grams/10 min. under Condition G of ASTM Test D1238-73, to a heating station where it is heated to its softening point, advancing the heated sheet to a forming station having molds of said desired shape, and molding the sheet within said forming station.

4,386,189

PROCESS FOR THE POST-CHLORINATION OF VINYL CHLORIDE POLYMERS

Alfred J. Ackerman, West Chester, Pa., and David L. Lull, North East, Md., assignors to Delaware City Plastics Corporation, Dallas, Tex.

Filed May 5, 1981, Ser. No. 260,828

Int. Cl.[3] C08F 8/22

U.S. Cl. 525—358 10 Claims

1. A process for the post-chlorination of a granular, microporous solid polymer of which about 75 to about 100 percent by weight is derived from vinyl chloride so as to increase the chlorine content thereof by at least about 5 percent by weight, said process comprising (a) establishing a reaction mass having a stoichiometric excess of liquified chlorine, providing a distinct liquid chlorine phase, (b) permitting reaction of granular polymer contained in said reaction mass at a temperature of between about 30° and about 75° C. and in the presence of a minor fraction of a percent by weight based on said polymer of organic peroxy catalyst which generates organic free radicals at said temperature, and (c) maintaining said liquid chlorine phase of the reaction mass through the major portion of chlorination while also maintaining reactants as a thorough intermixture in a pool of aqueous hydrochloric acid which is at least equal to the weight of said polymer and in the presence of less than 1 percent by weight, based on said polymer, of organic solvents or swelling agents.

4,386,190

POLYMER BLEND OF DIENE/VINYL AROMATIC BLOCK COPOLYMER AND STYRENE/ACRYLATE COPOLYMER

Fay W. Bailey, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 23, 1982, Ser. No. 410,767

Int. Cl.[3] C08L 53/02

U.S. Cl. 525—93 5 Claims

1. A high impact resistant composition comprising a blend consisting of (a) a resinous, essentially non-elastomeric block copolymer of from 30–36 weight percent of a conjugated diene and from 64–70 weight percent of a vinylarene and (b) a copolymer consisting of a vinylarene and an acrylate, said blend having from about 21–34 total weight percent of said conjugated diene.

4,386,191

COMPOSITIONS FOR FORMING POLY(OXAZOLIDONE/URETHANE) THERMOSETS AND PRODUCTS THEREFROM

Anthony L. DiSalvo, Greenwich, Conn., and Chung-Chieh Tsai, South Salem, N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Oct. 8, 1981, Ser. No. 309,737

Int. Cl.[3] C08G 59/14, 18/42, 18/58

U.S. Cl. 525—504 17 Claims

1. The reaction of polyol, acid anhydride and diepoxide, in a single step, to form a prepolymer containing two terminal epoxide groups and two nonterminal, secondary hydroxy groups.

7. A composition for the production of thermoset compositions containing oxazolidone and urethane linkages which comprises a polyisocyanate and a prepolymer composition containing a prepolymer with two terminal epoxy groups, two non-terminal, secondary hydroxy groups and ester linkages obtained by reacting a polyol, an acid anhydride, and a diepoxide.

4,386,192

PROCESS FOR THE PREPARATION OF POLYMERS OF DEFINITE VISCOSITIES

Sameer H. Eldin, Birsfelden, and Peter Grieshaber, Binningen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

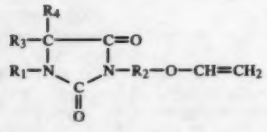
Filed Feb. 10, 1982, Ser. No. 347,401

Claims priority, application Switzerland, Feb. 19, 1981, 1108/81

Int. Cl.³ C08F *26/12*

U.S. Cl. 526—218 **8 Claims**

1. An improved process for preparing a copolymer and concomitantly controlling its specific viscosity to values between 0.3 and 16.8, as measured on a 1% solution in N,N-dimethylformamide at 25° C., by copolymerizing (a) a hydantoin vinyl ether of formula I



(I)

in which R_1 represents hydrogen or an organic radical, R_2 represents an alkylene having 1 to 6 C atoms or the radical —alkylene—O)$_n$ alkylene in which the alkylenes contain 1 to 6 C atoms and n represents a number from 1 to 6, and R_3 and R_4 independently of one another each represent hydrogen, an alkyl having 1 to 6 C atoms, or an aryl or R_3 and R_4 together represent the tetramethylene or pentamethylene radical, with (b) an olefinically unsaturated polymerizable compound in a molar ratio of a:b of 1:0.01 to 1:100, in the presence of a free-radical initiator and of an inert gas at a temperature within the range of 20° C. to 110° C., wherein the improvement comprises carrying out the copolymerization reaction in a solvent mixture consisting of cyclohexane and toluene, the proportion of cyclohexane in the solvent mixture being 0.5 to 95% by volume, and where 0.1 to 30 grams of the comonomers (a) plus (b) are employed per each 100 ml of the solvent mixture.

4,386,193

CYANOACRYLATE ADHESIVE COMPOSITION

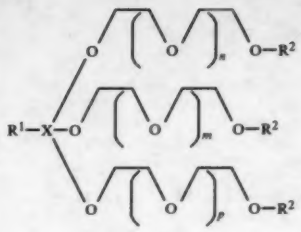
Karl Reich, Carlsberg, and Heinz A. Tomaschek, Heidelberg, both of Fed. Rep. of Germany, assignors to Teroson G.m.b.H., Heidelberg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 242,509, Mar. 10, 1981, abandoned. This application Jun. 19, 1981, Ser. No. 275,376

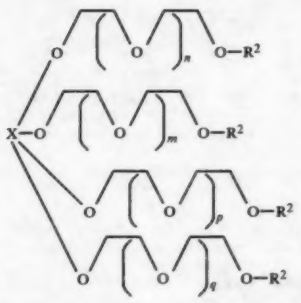
Int. Cl.³ C08F *20/42*

U.S. Cl. 526—298 **11 Claims**

1. An α-cyanoacrylate based adhesive composition having a catalytic amount of polymerization catalyst therein; said polymerization catalyst comprises at least one three or four arm podand compound of the general formula:



or



in which X is selected from a carbon atom or a silicon atom, R^1 represents hydrogen or a lower alkyl group, each R^2 separately represents a lower alkyl group and m, n, p, and q each represent a whole number of from about 2 to 50.

4,386,194

STABLE, ANAEROBICALLY-HARDENING ADHESIVES CONTAINING MIXED HN-ACIDIC COMPOUND/TERTIARY AMINE/PERCARBOXYLIC ACID INITIATORS

Werner Gruber, Korschenbroich, Fed. Rep. of Germany, assignor to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf-Holthausen, Fed. Rep. of Germany

Filed Feb. 18, 1982, Ser. No. 349,836

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1981, 3111133

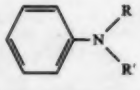
Int. Cl.³ C08F *20/10*

U.S. Cl. 526—301 **4 Claims**

1. A stable, anaerobically-hardening adhesive system based on polymerizable methacrylates and acrylates which are free of peroxides and hydroperoxides and herein at an accelerated rate under anaerobic conditions having, for 100 parts by weight of said polymerizable methacrylates and acrylates:

(A) from 0.2 to 10 parts by weight of at least one HN-acidic compound which is soluble in said polymerizable methacrylates and acrylates and is selected from the group consisting of organic sulfonic hydrazides, carboxylic hydrazides, sulfimides, disulfonyl imides and acyl cyanamides,

(B) from 0.2 to 5 parts by weight of at least one tertiary amine having at least one hydrocarbon aryl attached to the nitrogen, said amine having the grouping



at least once, in which the aromatic radical optionally is

condensed with one or more aromatic hydrocarbon radicals and substituted by a member selected from the group consisting of halogen, alkyl having from 1 to 12 carbon atoms and

and R and R', respectively, represent alkyl having from 1 to 12 carbon atoms, and

(C) from 0.1 to 5 parts by weight of at least one organic percarboxylic acid selected from the group consisting of peralkanoic acids having from 1 to 18 carbon atoms, perhaloalkanoic acids having from 2 to 18 carbon atoms, monoperalkanedioic acids having from 2 to 18 carbon atoms, diperalkanedioic acids having from 2 to 18 carbon atoms, benzene percarboxylic acids, halobenzene percarboxylic acids and nitrobenzene percarboxylic acids.

4,386,195

DYESTUFF PREPARATIONS, PROCESSES FOR THEIR PRODUCTION AND THEIR USE FOR DYEING PLASTICS

Fritz Bremer, Leverkusen; Michael Kressner, Leichlingen; Karlheinz Wolf; Konrad Nonn, both of Leverkusen; Reinhold Hörnle, Cologne, and Georg Pape, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 117,136, Jan. 30, 1980, abandoned. This application Mar. 2, 1981, Ser. No. 239,819

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1979, 2905975

Int. Cl.³ C08K *5/23*; C08G *18/32*; C08K *5/43*

U.S. Cl. 528—73 **9 Claims**

1. In a process for coloring a polyurethane in which a dyestuff dispersion is mixed with a polyalcohol before producing the polyurethane and the polyurethane plastic is then produced by a known process by reaction with a polyisocyanate or the dyestuff dispersion is metered into the reaction components during production of the polyurethane, the improvement which comprises employing as the dyestuff dispersion a sparingly soluble or water insoluble dyestuff and at least one polyester of phthalic acid with triethylene glycol and nonyl or iso-nonyl alcohol.

4,386,196

INTERFACIAL PROCESS FOR PRODUCING POLY(ESTER-CARBONATE) CONTAINING PHENOLPHTHALEIN

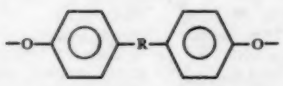
Tse C. Wu, Morristown, and Leon Segal, Randolph, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Apr. 2, 1982, Ser. No. 364,589

Int. Cl.³ C08G *63/64*

U.S. Cl. 528—182 **13 Claims**

1. A process for the production of a poly(ester-carbonate) containing aromatic dicarboxylate moieties, carbonate moieties, 2,2-bis(p-oxyphenyl)phthalide moieties derived from phenolphthalein and bisphenol-derived moieties of the formula



wherein R is a divalent organic moiety of 1–6 carbons, —S— or a single bond, which comprises:

(a) reacting an aqueous solution consisting essentially of water, base and an alkali metal or an alkaline earth metal salt of phenolphthalein with an organic solution consisting essentially of a substantially water-insoluble solvent and an aromatic or cycloaliphatic diacyl halide, in the presence of a phase transfer catalyst, to form a phenolphthalein aromatic dicarboxylate polyester oligomer; and

(b) polymerizing said polyester oligomer by reaction with phosgene and additional aromatic diacyl halide and by reaction with an aqueous solution of the alkalie metal or alkaline earth metal salt of the bisphenol-derived moiety to form a poly(ester-carbonate).

4,386,197

HOT-MELT ADHESIVE COPOLYAMIDE HAVING RESISTANCE TO ENGINE FUELS

Hans J. Panoch; Heinz Scholten, both of Haltern, and Rainer Feldmann, Marl, all of Fed. Rep. of Germany, assignors to Chemische Werke Hüls A.G., Marl, Fed. Rep. of Germany

Filed Jun. 2, 1980, Ser. No. 155,670

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1979, 2924323

Int. Cl.³ C08G *69/14*

U.S. Cl. 528—324 **12 Claims**

1. A hot melt adhesive comprising a binary copolyamide consisting of the polymeric reaction product of:

(a) about 50–90 percent by weight of a lactam or an ω-aminocarboxylic acid having at least 10 methylene groups; and

(b) about 50–10 percent by weight of equimolar quantities of an aliphatic dicarboxylic acid and a diamine, said diamine selected from the group consisting of aliphatic diamines and cycloaliphatic diamines, said dicarboxylic acid and said diamine having a total of at least 13 methyl groups, methylene groups, methylidyne groups or a mixture of said groups; wherein said components (a) and (b) are mixed in a ratio which provides said copolyamide having an extractable content not more than 5 percent by weight as determined after 9 hours in boiling ethanol.

4,386,198

2-HYDROXYACLACINOMYCIN A AND 2-HYDROXYAKLAVINONE AND PROCESS FOR PREPARING SAME

Toshikazu Oki, Yokohama; Akihiro Yoshimoto, Fujisawa; Kageaki Kouno, Tokyo; Taiji Inui, Yatsushiro; Tomio Takeuchi, and Hamao Umezawa, both of Tokyo, all of Japan, assignors to Sanraku-Ocean Co., Ltd., Tokyo, Japan

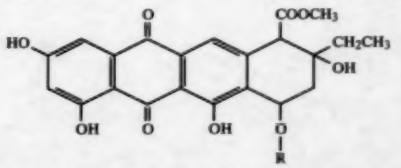
Filed Sep. 5, 1980, Ser. No. 184,518

Claims priority, application Japan, Sep. 7, 1979, 54-115520; Jul. 7, 1980, 55-92880

Int. Cl.³ C07H *15/24*; A61K *31/71*; C12P *19/56*

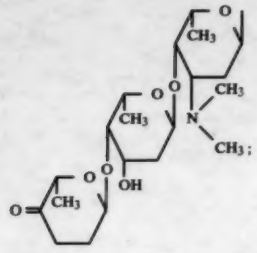
U.S. Cl. 536—6.4 **3 Claims**

1. 2-Hydroxyaklavinone and 2-hydroxyaclacinomycin A of the formula I:



(I)

wherein R is selected from the group consisting of a hydrogen atom and a sugar residue: rhodosamine-2-deoxyfucose-cinerulose,



and the non-toxic acid addition salts thereof when R is the sugar residue.

4,386,199

CEPHALOSPORINS HAVING AN IMINO SUBSTITUTED PIPERAZINDIONCARBONYLAMINO ACYL SIDECHAIN

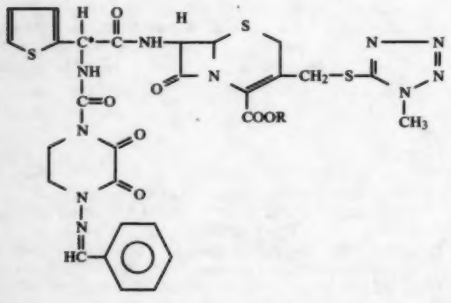
Uwe D. Treuner, and Hermann Breuer, both of Regensburg, Fed. Rep. of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation of Ser. No. 109,384, Jan. 3, 1980, abandoned, which is a continuation of Ser. No. 950,891, Oct. 12, 1978, abandoned. This application May 4, 1981, Ser. No. 259,876

Int. Cl.³ C07D *501/56*

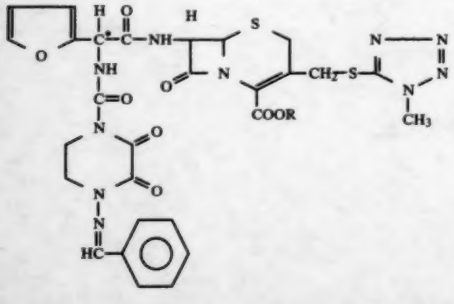
U.S. Cl. 542—420 **6 Claims**

1. A compound of the formula



wherein R is hydrogen, sodium or potassium.

4. A compound of the formula



wherein R is hydrogen, sodium or potassium.

4,386,200

7-STYRYL COUMARIN DERIVATIVES

Fritz Fleck, Bottmingen, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

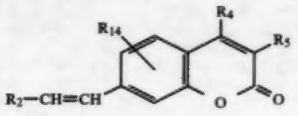
Filed Sep. 30, 1981, Ser. No. 306,966

Claims priority, application Switzerland, Oct. 3, 1980, 7404/80; Oct. 3, 1980, 7405/80

Int. Cl.³ C09B *23/10*

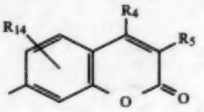
U.S. Cl. 542—441 **9 Claims**

1. A compound of the formula I'

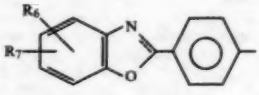


I'

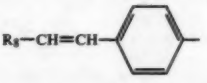
where R_2 is one of the groups (ii), (iii) and (iv)



(ii)



(iii)



(iv)

R_4 and R_5, independently are hydrogen, C_{1-4}alkyl or C_{1-4}alkyl monosubstituted by phenyl which phenyl is unsubstituted or monosubstituted by methoxy, methyl or chlorine; or

R_4 and R_5 together with the coumarinyl-7 group to which they are attached form a 3,4-benzocoumarinyl-7 in which the 3,4-benzo group is substituted by two substituents R_{20} selected from hydrogen, C_{1-4}alkyl, C_{1-4}alkoxy or chlorine or

R_4 and R_5 together with the coumarinyl-7 group to which they are attached form a 3,4-fused cyclo C_{5-6}alkenyl coumarinyl-7 group which is substituted by two groups R_{20} defined above,

the pairs R_4 and R_5 shown in formulae I' and (ii), respectively, being the same or different,

either R_6 and R_7 independently are hydrogen, C_{1-4}-alkyl, halogen or C_{1-4}alkyl substituted by a phenyl group which is unsubstituted or monosubstituted by methyl, methoxy or chlorine;

or R_6 and R_7 together form a $—CH_2CH_2CH_2—$ or $—CH_2CH_2CH_2CH_2—$ group which is attached to adjacent carbon atoms of the phenyl ring;

R_8 is —CN, $—COOR_9$, $CONR_{10}R_{11}$ or SO_2R_{12};

R_9 and R_{12} independently are C_{1-4}alkyl, C_{1-4}alkyl substituted by a phenyl group which is unsubstituted or monosubstituted by methyl, methoxy or chloro, C_{2-4}alkyl monosubstituted by hydroxy, C_{1-4}alkoxy or C_{1-4}alkoxy-C_{2-6}alkoxy, cyclohexyl unsubstituted or substituted by up to three methyl groups or phenyl unsubstituted or monosubstituted by C_{1-4}alkyl, trifluoromethyl, cyano, C_{1-4}alkoxy, chloro or carboxy;

R_{10} is hydrogen, C_{1-4}alkyl, C_{1-4}alkyl substituted by phenyl which is unsubstituted or monosubstituted by methyl, methoxy or chloro, or C_{2-4}alkyl monosubstituted by hydroxy, C_1–4-alkoxy or C_{1-4}alkoxy-C_{2-6}alkoxy; and

R_{11} has the significances of R_{10} (independently of R_{10}) and phenyl unsubstituted or substituted by C_1–4alkyl, trifluoromethyl, chloro, cyano, carboxy or C_{1-4}alkoxy;

R_{14} is hydrogen, chlorine, C_{1-4}alkyl or C_{1-4}alkyl substituted by phenyl, which phenyl is unsubstituted or monosubstituted by methoxy, methyl or chloro.

4,386,201

PHTHALIMIDOGUANIDINE PLANT GROWTH REGULATORS

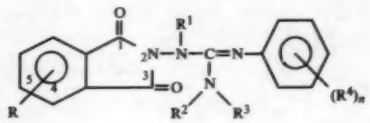
Jerry L. Rutter, Mentor, Ohio, assignor to Gulf Oil Corporation, Pittsburgh, Pa.

Division of Ser. No. 165,917, Jul. 3, 1980. This application May 11, 1981, Ser. No. 262,101

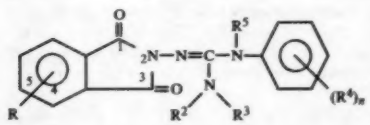
Int. Cl.³ C07D *209/34, 401/12, 403/12*

U.S. Cl. 544—144 **48 Claims**

1. Compounds of the following general structural formulas:



(1a)



(1b)

in which R, R^1 and R^5 are hydrogen or C_1 to C_5 alkyl, R^2 and R^3 are alike or unlike, one of which may be hydrogen but otherwise are substituents selected from C_1 to C_5 alkyl, alkenyl or alkynyl, branched or unbranched, C_2 to C_5 hydroxyalkyl or alkoxyalkyl, C_3 to C_5 cycloalkyl, furfuryl, pyridyl, benzyl, phenyl, C_1 to C_5 alkylphenyl, or $—NR^2R^3$ together may be 2,5-dimethyl-1-pyrryl, 4-morpholinyl or 1-pyrrolidinyl, R^4 is halogen, nitro, cyano, trifluoromethyl or C_1 to C_5 alkyl and n is zero, one or two.

4,386,202

CHLOROAMMELIDES AND THEIR PREPARATION

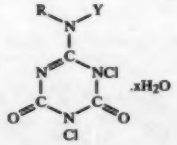
George D. Nelson, Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jun. 5, 1981, Ser. No. 270,677

Int. Cl.³ C07D *251/46*

U.S. Cl. 544—194 **20 Claims**

1. A compound having the structural formula



wherein R is alkali metal or H, Y is Cl or H, Y is H when R is H, and x represents the number of moles of water of hydration combined with each mole of said compound, x being zero or a positive integer, said compound being not fully hydrated.

4,386,203

HALOGEN-CONTAINING S-TRIAZINES

Herbert Naarmann, Wattenheim; Klaus Penzien, Frankenthal; Franz Brandstetter, Neustadt; Gerhard Lindenschmidt, Leimen, and Erhard Seiler, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 25, 1981, Ser. No. 305,857

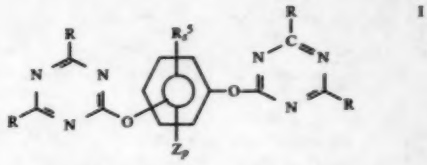
Claims priority, application Fed. Rep. of Germany, Oct. 16, 1980, 3039059

Int. Cl.³ C07D *251/30, 251/34*

U.S. Cl. 544—219 **3 Claims**

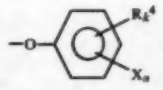
1. A halogen-containing s-triazine compound of the formula

I

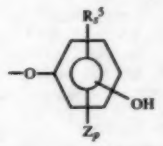


I

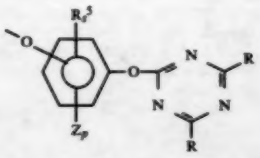
where R is OH, R^1, R^2 or R^3, R^1 is



where R^4 is lower alkyl or lower haloalkyl, X is bromine or chlorine, k and n are 0 or integers from 1 to 5 and k+n is not more than 5, R^2 is



where R^5 is lower alkyl or lower haloalkyl, Z is bromine or chlorine, s and p are 0 or integers from 1 to 4 and s+p is not more than 4, and R^3 is



where R, R^5, Z, s and p have the above meanings.

4,386,204

6-PIPERIDINO-DIBENZ[d,g][1,3,6,2]DIOXATHIOPHOSPHOCINE

Michael Rasberger, Riehen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 146,974, May 5, 1980, Pat. No. 4,322,527.
This application Oct. 26, 1981, Ser. No. 315,123
Claims priority, application Switzerland, May 15, 1979, 4504/79
Int. Cl.³ C07F 9/24
U.S. Cl. 546—21 **1 Claim**

1. A compound which is 6-piperidino-2,10-dimethyl-4,8-di-tert-butyl-dibenz[d,g][1,3,6,2]dioxathiaphosphocine.

4,386,205

RESOLUTION OF RACEMIC 5-PHENYL-2-PENTANOL

Bernard S. Moore, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Oct. 22, 1981, Ser. No. 313,560
Int. Cl.³ C07D 491/22
U.S. Cl. 546—35 **1 Claim**

1. The (+)-brucine salt of (S)-5-phenyl-2-pentyl hemiphthalate.

4,386,206

TERTIARY AMIDES AS SOLVENTS IN ANTHRAPYRIDONE SYNTHESES

Robert E. Wingard, Jr., Mountain View, and Sally A. Swanson, San Jose, both of Calif., assignors to Dynapol, Palo Alto, Calif.

Filed Sep. 29, 1981, Ser. No. 306,783
Int. Cl.³ C09B 5/14
U.S. Cl. 546—76 **11 Claims**

1. The process for preparing an anthrapyridone which comprises contacting under acylation reaction conditions in a tertiary amide solvent, a 1-aminoanthraquinone or 1-alkylaminoanthraquinone with a phenylacetyl halide to form an acylation product, and thereafter without isolation contacting said acylation product in said tertiary amide solvent with alkali metal base at a temperature of 20° C. to 100° C. with agitation.

4,386,207

PROCESS FOR THE PREPARATION OF C-SUBSTITUTED PYRIDINES AND/OR HYDROGENATED C-SUBSTITUTED PYRIDINES, QUINOLINES AND/OR HYDROGENATED QUINOLINES

Theodorus F. M. de Graaf, Beek, and Charles H. Geersheuvels, Geleen, both of Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands

Filed Nov. 13, 1981, Ser. No. 321,055
Claims priority, application Netherlands, Nov. 15, 1980, 8006256
Int. Cl.³ C07D 215/06, 213/09
U.S. Cl. 546—164 **6 Claims**

1. In a process for the preparation of pyridines and/or hydrogenated pyridines that have been substituted with a hydrocarbon group at one or more of the carbon atoms, by the steps of:

passing a γ-cyanoketone, in a gaseous phase in the presence of hydrogen, over a first catalyst containing a catalytically active component selected from the group consisting of copper, silver, gold, iron, nickel, cobalt, ruthenium, rhodium, palladium, osmium, iridium, platinum and compounds thereof, thereby forming a reaction mixture containing said substituted pyridines and/or hydrogenated pyridines and hydrogen;

separating a hydrogen-containing gas from said reaction mixture; and

subjecting at least a portion of said hydrogen-containing gas to a catalytic treatment and thereafter recycling it to said reaction zone,

the improvement comprising carrying out said catalytic treatment in at least two steps wherein,

in said first step, said hydrogen-containing gas to be recycled is passed over a catalyst containing a component selected from the group consisting of iron, nickel, cobalt, platinum, and compounds thereof, at a temperature in the range of between about 250° and 550° C.; and

in said second step, said hydrogen-containing gas to be recycled is passed over a catalyst containing a component selected from the group consisting of iron, nickel, cobalt, and compounds thereof, at a temperature of between about 550° to 800° C.

4,386,208

PREPARATION OF N-ALKYLPIPERIDINES AND N-ALKYLPYRROLIDINES

Walter Rebafka, Eppelheim; Jüergen Schossig, Mannheim; Wolfgang Reiss, Ludwigshafen, and Dieter Voges, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 15, 1981, Ser. No. 283,651
Claims priority, application Fed. Rep. of Germany, Jul. 26, 1980, 3028384
Int. Cl.³ C07D 295/02
U.S. Cl. 546—184 **7 Claims**

1. A process for the preparation of an N-alkylpiperidine or N-alkylpyrrolidine from a dicarboxylic acid N-alkylimide by hydrogenation, the acid having a carbon chain length of 4 or 5 and the alkyl substituent being of 1 to 20 carbon atoms, which comprises:

(a) hydrogenating the dicarboxylic acid N-alkylimide in a reactor having a fixed bed hydrogenation catalyst;

(b) removing the reactant from the reactor prior to complete conversion;

(c) separating the product of (b) by distillation into a distillate containing the N-alkylpiperidine or N-alkylpyrrolidine product and water, and a high boiling residue containing both partially hydrogenated and unconverted dicarboxylic acid N-alkylimide; and (d) recycling said residue into the hydrogenation reactor; wherein the space velocity of the reactants through the reactor is controlled to limit conversion to 10–90% of theory, whereby the higher concentration of reactant and the removal of water of reaction result in a high over-all rate of conversion and a high yield.

4,386,209

CHICHIBABIN REACTION

Charles K. McGill, Indianapolis, and James J. Sutor, Greenwood, both of Ind., assignors to Reilly Tar & Chemical Corporation, Indianapolis, Ind.

Filed Apr. 8, 1982, Ser. No. 366,598
Int. Cl.³ C07D 213/73
U.S. Cl. 546—311 **47 Claims**

1. In a Chichibabin amination of a pyridine base by sodamide in an organic solvent, the improvement comprising the steps of:

(a) conducting the reaction under pressure of at least about 50 psi in the gas phase above the reaction mixture; and

(b) adding ammonia to the mixture sufficient to produce a partial pressure of ammonia of at least about 5 psi in the gas phase.

47. A new composition of matter, comprising 2-amino-5-(3-phenylpropyl)pyridine or 2-amino-3-(3-phenylpropyl)pyridine.

4,386,210

2-(2-AMINO-4-THIAZOLYL)-2-METHOXYIMINO-ACETIC ACID DERIVATIVES

Rene Heymes, Romainville, France, assignor to Roussel Uclaf, Paris, France

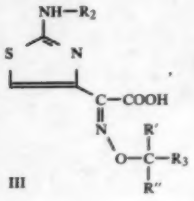
Division of Ser. No. 886,421, Mar. 14, 1978, Pat. No. 4,288,434. This application May 4, 1981, Ser. No. 260,311

Claims priority, application France, Mar. 25, 1977, 77 08988; Dec. 5, 1977, 77 36512

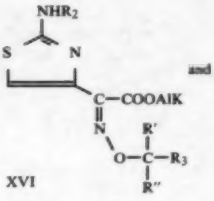
Int. Cl.³ C07D *277/42, 277/44*

U.S. Cl. 548—194 22 Claims

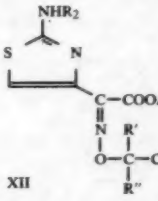
1. A syn isomer of a compound having a formula selected from the group consisting of



III



and XVI



XII

wherein R′ and R″ are individually selected from the group consisting of hydrogen and alkyl of 1 to 3 carbon atoms, R_2 is selected from the group consisting of chloroacetyl and groups easily removable by acid hydrolysis or hydrogenolysis, R_3 is selected from the group consisting of —CN, $—CONH_2$ and $—COOR_1''$, R_1'' is selected from the group consisting of alkyl of 1 to 3 carbon atoms and an ester group easily removable by acid hydrolysis or hydrogenolysis and AlK is alkyl of 1 to 4 carbon atoms.

4,386,211

ANTI-ULCER UREA COMPOUNDS

Richard E. L. Henderson, Evanston, and Barnett S. Pitzele, Skokie, both of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Filed Aug. 25, 1981, Ser. No. 295,986

Int. Cl.³ C07D *417/12*

U.S. Cl. 548—196 4 Claims

1. A compound of the formula

$$R_1CH_2S(CH_2)_2NHCONHR_2$$

wherein

R_1 is:

(a) 5-[di(loweralkyl)aminomethyl]-2-furanyl

(b) 5-methyl-1H-imidazol-4-yl

(c) 2-[(aminoiminomethyl)amino]-4-thiazolyl

wherein

R_2 is:

(a) 4-methyl-2-thiazolyl

4,386,212

PROCESS FOR THE PRODUCTION OF 5-(4′-CHLORO-5′-SULFAMOYL-2′-THENYLAMINO)-PHENYLTETRAZOLE

Friedrich Bätz, Einhausen, and Karl Lauer, Schriesheim, both of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Aug. 4, 1981, Ser. No. 289,934

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1980, 3034664

Int. Cl.³ C07D *257/04*

U.S. Cl. 548—252 10 Claims

1. In a process for the preparation of 5-(4′-chloro-5′-sulfamoyl-2′-thenylamino)-phenyltetrazole by condensing 5-(4′chloro-5′-sulfamoyl-2′-aminophenyl)-tetrazole with thiophene-2-aldehyde in the presence of an acid catalyst, azeotropically distilling off the water formed, reducing the 5-[4′-chloro-5′-sulfamoyl-2′-(thenylidene-2-amino)-phenyl]-tetrazole so obtained with a boranate, and carrying out the reduction in the same medium without prior isolation of the 5-[4′-chloro-5′-sulfamoyl-2′-(thenylidene-2-amino)-phenyl]-tetrazole, the improvement comprising carrying out the condensation in dimethyl sulfoxide as a solvent.

4,386,213

DI- AND OLIGO-1,2,4-TRIAZOLIDINE-3,5-DIONES AND PROCESSES FOR THEIR PRODUCTION

Henning Giesecke, Cologne; Rudolf Mertes, Leverkusen, and Ludwig Rottmaier, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

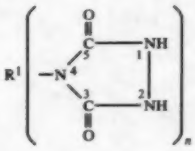
Filed Jun. 29, 1981, Ser. No. 278,647

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1980, 3027611

Int. Cl.³ C07D *249/12*

U.S. Cl. 548—264 2 Claims

1. A di- or oligo-1,2,4-triazolidine-3,5-dione of the formula

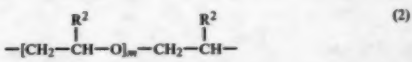


wherein

n is a number of from 2 to 5 and R^1 is selected from the group consisting of

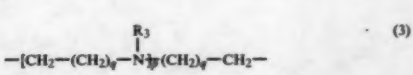
(1) $—(CH_2)_x—$

wherein x is a number of from 2 to 20;



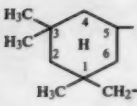
(2)

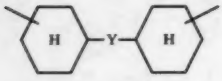
wherein R^2 is H or CH_3 and m is a number of from 1 to 9;



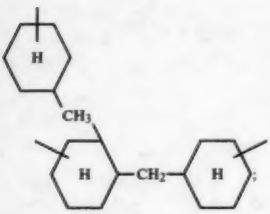
(3)

wherein R_3 is C_1–C_4-alkyl, p is a number of from 1 to 4 and q is a number of from 1 to 2;

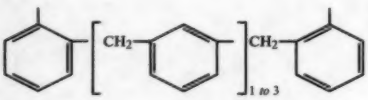




wherein Y is C_1–C_4-alkylene, O or —$N(CH_3)$—;



wherein X is C_1–C_4-alkylene, O or —$N(CH_3)$—;



and

—$(CH_2)_3$—O—$(CH_2)_{2\ to\ 4}$—O—$(CH_3)_3$—. (10)

4,386,214

PROCESS FOR THE PREPARATION OF CYCLIC PERFLUOROALIPHATICDISULFONIC ACID ANHYDRIDES

Fred E. Behr, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 229,871, Jan. 30, 1981, Pat. No. 4,329,478. This application Dec. 1, 1981, Ser. No. 326,422

Int. Cl.³ C07D *327/00*

U.S. Cl. 549—11 **2 Claims**

1. A process for the preparation by by ring formation of cyclic anhydrides of perfluoroaliphaticdisulfonic acids, having the formula:

wherein R_f is perfluoroalkylene having 2 to 5 catenary carbon atoms or perfluorocycloalkylene having 4 to 7 ring atoms, R_f optionally being substituted by one or more straight chain, branched, or cyclic perfluoralkyl groups of 1 to 12 carbon atoms, with R_f having a total of up to 14 carbon atoms, comprising the steps of:

(a) mixing perfluoroaliphaticdisulfonic acid precursor with excess phosphorus pentoxide,

(b) heating the resulting mixture to dehydrate and cyclize said perfluoroaliphaticdisulfonic acid under anhydrous conditions, and

(c) recovering said cyclic anhydride under anhydrous conditons from the resulting reacted mixture.

4,386,215

MALEIC ANHYDRIDE PRODUCTION WITH HIGH CRUSH STRENGTH CATALYSTS

Ramon A. Mount, and Warn D. Robinson, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 27, 1981, Ser. No. 325,157

Int. Cl.³ C07D *307/60*

U.S. Cl. 549—259 **29 Claims**

1. In a method for the preparation of maleic anhydride by oxidizing a reactant consisting essentially of a saturated aliphatic hydrocarbon having 4–10 carbon atoms in the presence of a phosphorus-vanadium-oxygen-containing complex catalyst prepared by the process comprising:

(a) contacting vanadium and phosphorus compounds under conditions which will provide a catalyst precursor wherein greater than 50 atom % of the vanadium is in the tetravalent state;

(b) recovering the catalyst precursor;

(c) forming the catalyst precursor into agglomerates; and

(d) calcining the catalyst precursor agglomerations at a temperature between about 300° C. and 600° C.

the improvement comprising employing, as the catalyst, the product of the improved process wherein the recovered catalyst precursor is wetted with a non-aqueous solvent in an amount sufficient to increase crush strength and then dried prior to calcining.

4,386,216

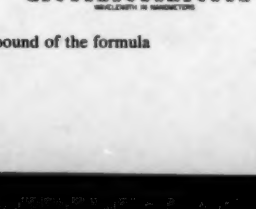
MAGENTA DYE DEVELOPERS

Louis Locatell, Jr., Wellesley Hills; Howard G. Rogers, Weston; Ruth C. Bilofsky, Lexington; Ronald F. Ciecuch, Brookline, and Charles M. Zepp, Boylston, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

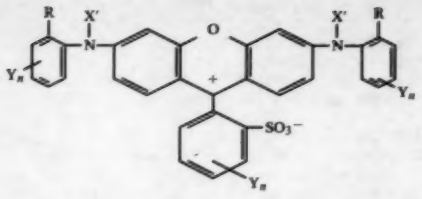
Continuation-in-part of Ser. No. 32,888, Apr. 24, 1979, abandoned. This application Apr. 24, 1980, Ser. No. 143,282

Int. Cl.³ C07D *311/82*

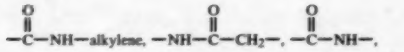
U.S. Cl. 549—394 **15 Claims**



1. A compound of the formula



wherein each R is the same or different and is an alkyl group, each Y is a diffusion control substituent —A—D wherein D is a diffusion control moiety and A is selected from the group consisting of a covalent bond, alkylene, —SO_2—NH-alkylene, —SO_2—, —S-alkylene, —S—, —O—,



and —SO_2NH—; each X′ is the same or different and is hydrogen, alkyl or —$(CH_2—X^2—D)_n$ wherein X^2 is alkylene, and n is 0 or 1, provided that at least one n is 1, said diffusion control moiety D being selected from the group consisting of a hydroquinonyl silver halide developing moiety, a color coupling phenol or naphthol moiety having an available coupling position para to the hydroxyl group, a sulfonamido phenol group which will cleave or ring close following oxidation, and a thiazolidine group capable of silver-catalyzed cleavage.

4,386,217

OXIDATIVE ALKOXYCARBONYLATION OF OLEFINS WITH PALLADIUM/HETEROPOLY ACID CATALYST SYSTEMS

Zarah Ainbinder, and George W. Parshall, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 21, 1981, Ser. No. 265,908

Int. Cl.³ C07C 67/38

U.S. Cl. 560—207 **7 Claims**

1. Catalytic process for the oxidative alkoxycarbonylation of olefins, in which one or more olefins, a primary or secondary alcohol, carbon monoxide, and oxygen are contacted and reacted in the presence of a palladium(II) compound and a heteropoly acid, said heteropoly acid having the formula

$$[H]_{3+a-n}[XMo_{12-a-b}W_bV_aO_{40}]$$

wherein:

X is an element selected from the group consisting of P, Si, As, Ge, Ti and Zr;

n is the oxidation state of X;

a is 0 to about 4;

b is 0 to about 12;

at a temperature greater than about 40° C., wherein the process the amount of palladium is about 10^{-5} to about 10^{-8} gram-atom per mole of olefin and the amount of heteropoly acid is about 5×10^2 to about 1×10^5 moles per gram-atom of palladium.

4,386,218

POLYAMINES AND PROCESSES FOR THE PRODUCTION OF SUCH POLYAMINES AND OF POLYURETHANE PLASTICS THEREFROM

Werner Rasshofer, Cologne; Dieter Dieterich, Leverkusen, and Holger Meyborg, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 5, 1981, Ser. No. 308,326

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1980, 3039600

Int. Cl.³ C07C 127/15, 127/24

U.S. Cl. 564—38 **15 Claims**

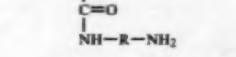
1. A process for the production of a polyamine having urethane and/or urea and/or biuret groups by hydrolysis of a compound having terminal isocyanate groups comprising:

(a) mixing an isocyanate prepolymer having urethane and/or urea and/or biuret groups with an aqueous base solution at a temperature of from 0° to 80° C. and in a quantity such that the equivalent ratio of hydroxyl to isocyanate groups is between from 0.3:1 to ≧1.01:1,

(b) treating the product of (a) with an acid ion exchanger to form an amine, and

(c) separating the product amine from any other materials present.

12. A polyamine corresponding to the general formula:



in which each R radical may independently represent a divalent straight- or branched- chain, aliphatic radical, a divalent cycloaliphatic radical, a 4,4′- and/or a 2,4′-dicyclohexylmethane radical or a 2,4- and/or 2,6-methyl cyclohexane radical.

4,386,219

HYDROGENATION CATALYSTS FOR THE PREPARATION OF PROPANEDIOLS AND PROCESSES FOR THE PREPARATION OF PROPANEDIOLS, USING SUCH CATALYSTS

Franz Merger, Frankenthal; Ernest Miesen; Franz J. Broecker, both of Ludwigshafen; Wolfgang Schroeder, Bad Durkheim; Karl Baer, Weinheim; Juergen Paetsch, Wachenheim, and Leopold Hupfer, Friedelsheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

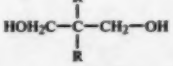
Division of Ser. No. 280,776, Jul. 6, 1981. This application Feb. 2, 1982, Ser. No. 345,028

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1980, 3027890

Int. Cl.³ C07C 31/20, 33/26, 31/13, 41/26

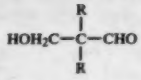
U.S. Cl. 568—853 **14 Claims**

1. A process for the preparation of propanediols of the formula



I

where the individual radicals R can be identical or different and each is an aliphatic, araliphatic or aromatic radical, or the two radicals R together with the adjacent carbon atom are members of an alicyclic ring, by hydrogenating an aldehyde in the presence of a copper-containing hydrogenation catalyst, wherein the hydrogenation is carried out with a hydroxypropionaldehyde of the formula



II

where R has the above meanings, under a pressure of at most 300 bar, at a hydrogenation temperature of from 50° to 200° C., and with a hydrogenation catalyst which has a specific surface area of from 50 to 120 square meters per gram, solely or partially contains crystals having a spinel structure and copper in the form of copper oxide, and has been obtained by precipitating copper and aluminum in a ratio of from 0.25 to 3 atoms of copper per atom of aluminum from their compounds in the presence of a carbonate at a pH of from 4.5 to 9 and calcining the resulting precipitate at from 300° to 800° C.

4,386,220

POLYUNSATURATED BICYCLIC COMPOUNDS, THEIR PREPARATION AND USE OF SAME AS STARTING MATERIALS FOR PREPARING MONOUNSATURATED BICYCLIC COMPOUNDS

Charles Fehr, Geneva, Switzerland, assignor to Firmenich, SA, Switzerland

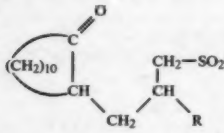
Division of Ser. No. 242,013, Mar. 9, 1981. This application Apr. 8, 1982, Ser. No. 366,609

Claims priority, application Switzerland, Mar. 31, 1980, 2535/80

Int. Cl.³ C07C *147/02*

U.S. Cl. 568—031 **1 Claim**

1. A compound having the formula



(II)

wherein symbol R represents a hydrogen atom or a methyl radical and Q represents an alkyl or an aryl radical.

4,386,221

PROCESS FOR THE PREPARATION OF ARYL ALKYL SULFONES AND ARYL VINYL SULFONES

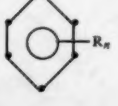
John A. Hyatt, and Alan W. White, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 28, 1981, Ser. No. 315,796

Int. Cl.³ C07C *147/06, 147/08*

U.S. Cl. 568—28 **13 Claims**

1. A process for the preparation of sulfones selected from aryl alkyl sulfones and aryl vinyl sulfones, said process comprising reacting one or more aryl compounds of the formula



where R represents alkyl groups containing 1 to 12 carbon atoms and combinations thereof and where n is an integer from 1 to 5, inclusive, with an alkyl sulfonyl fluoride or with a vinyl sulfonyl fluoride in the presence of a catalyst selected from $AlCl_3$ and $AlBr_3$.

4,386,222

METHOD FOR MAKING KETO ACIDS AND DIONE CYCLICS OBTAINED THEREFROM

James A. Cella, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 182,999, Sep. 2, 1980, Pat. No. 4,340,753. This application Dec. 4, 1981, Ser. No. 327,339

Int. Cl.³ C07C *45/66*

U.S. Cl. 568—346 **1 Claim**

1. A method for making dimedone which comprises

(1) oxidatively cleaving isophorone by ozonolysis in an aqueous organic solvent two-phase mixture in the presence of an alkali metal hydroperoxide in a phase transfer catalyst to produce 5-keto-3,3-dimethylhexanoic acid, and

(2) dehydrating the keto acid of (1) utilizing sulfuric acid at a concentration of from 70 to 80% and at a temperature of from 100° C. to 150° C.

4,386,223

METHOD OF PURIFYING HEXAFLUOROACETONE CONTAINING CHLOROFLUOROACETONES

Toshikazu Kawai; Yutaka Maruyama, both of Kamifukuoka; Junji Negishi, Kawagoe, and Akira Negishi, Sayama, all of Japan, assignors to Central Glass Company Limited, Ube, Japan

Filed Nov. 10, 1981, Ser. No. 320,079

Claims priority, application Japan, Nov. 11, 1980, 55-157664

Int. Cl.³ C07C *45/85*

U.S. Cl. 568—411 **6 Claims**

1. A method of purifying crude hexafluoroacetone containing at least one chlorofluoroacetone or a mixture containing at least one chlorofluoroacetone and at least one hydrogen halide, the method comprising the steps of:

(a) allowing the crude hexafluoroacetone to be absorbed in water to give an aqueous solution in which hexafluoroacetone and said at least one chlorofluoroacetone are present in the form of their respective hydrates wherein the ratio of water to the total of hexafluoroacetone and said at least one chlorofluoroacetone in said crude hexafluoroacetone is in the range of 3:1 to 100:1;

(b) adding a calcium compound selected from the group consisting of $CaCO_3$, $Ca(OH)_2$ and CaO to said aqueous solution to neutralize said at least one hydrogen halide;

(c) decomposing the hydrate of each of said at least one chlorofluoroacetone by first adding a molar equivalent of a decomposing agent based on the total quantity of hexafluoroacetone and said at least one chlorofluoroacetone present in said solution, wherein said decomposing agent is selected from the group consisting of alkali metal carbonates, alkaline earth metal hydroxides and alkaline earth metal oxides, to said aqueous solution and subsequently adding a mineral acid selected from the group consisting of anhydrous hydrogen chloride, hydrochloric acid and sulfuric acid to said aqueous solution in a quantity sufficient to neutralize said decomposing agent;

(d) providing $CaCl_2$ or a hydrate thereof in the aqueous solution, thereby partially dehydrating the reaction system and consequently concentrating hexafluoroacetone in the form of a hydrate; and

(e) separating hexafluoroacetone in the form of hydrate from the liquid reaction system after completion of step (d) wherein the solution spontaneously separates into two layers.

4,386,224

COLOR STABILIZATION OF MONOALKYL PHENOLS

Gerbrand Deetman, Hazelwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 31, 1981, Ser. No. 297,683

Int. Cl.³ C07C *37/88*

U.S. Cl. 568—703 **12 Claims**

1. A composition, comprising a monoalkyl phenol with an

alkyl group from C_8 to C_{13} and a color stabilizing amount of N,N-diethylhydroxylamine.

4,386,225

PROCESS FOR THE SEPARATION OF CRESOL FROM XYLENOL

Richard W. Neuzil, Downers Grove, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Jan. 11, 1982, Ser. No. 338,796
Int. Cl.³ C07C *37/82*
U.S. Cl. 568—758 **5 Claims**

1. A process for separating a cresol from a mixture containing up to 10 wt.% of said cresol and a xylenol which process employs an adsorbent comprising a Type X zeolite having barium and potassium cations at the exchangeable ionic sites, which process comprises the steps of:

(a) maintaining net fluid flow through a column of said adsorbent in a single direction, which column contains at least three zones having separate operational functions occurring therein and being serially interconnected with the terminal zones of said column connected to provide a continuous connection of said zones;

(b) maintaining an adsorption zone in said column, said zone defined by the adsorbent located between a feed input stream at an upstream boundary of said zone and a raffinate output stream at a downstream boundary of said zone;

(c) maintaining a purification zone immediately upstream from said adsorption zone, said purification zone defined by the adsorbent located between an extract output stream at an upstream boundary of said purification zone and said feed input stream at a downstream boundary of said purification zone;

(d) maintaining a desorption zone immediately upstream from said purification zone, said desorption zone defined by the adsorbent located between a desorbent input stream at an upstream boundary of said zone and said extract output stream at a downstream boundary of said zone;

(e) passing said feed mixture into said adsorption zone at a temperature in the range of from about 40° to about 260° C. and a pressure in the range of from about atmospheric pressure to about 500 psig and effecting the selective adsorption of said cresol by said adsorbent in said adsorption zone and withdrawing a raffinate output stream from said adsorption zone;

(f) passing a desorbent material having a substantially different average boiling point than the cresol and xylenol components of the feed stream into said desorption zone at a temperature within the range of from about 40° to about 260° C. and a pressure in the range of from about atmospheric pressure to about 500 psig to effect the displacement of said cresol from the adsorbent in said desorption zone;

(g) withdrawing an extract output stream comprising said cresol and desorbent material from said desorption zone;

(h) periodically advancing through said column of adsorbent in a downstream direction with respect to fluid flow in said adsorption zone, the feed input stream, raffinate output stream, desorbent input stream, and extract output stream to effect the shifting of zones through said adsorbent and the production of extract output and raffinate output streams.

4,386,226

PROCESS FOR THE ORTHO-ALKYLATION OF PHENOLS

Kenneth A. Adey, Kempsey; Frank S. Yates, Brocton, and John H. Young, Dunston Heath, all of England, assignors to Croda Synthetic Chemicals Limited, Goole, England

Filed Oct. 5, 1981, Ser. No. 308,730
Claims priority, application United Kingdom, Oct. 14, 1980, 8033114; Mar. 7, 1981, 8107218
Int. Cl.³ C07C *37/16*
U.S. Cl. 568—804 **7 Claims**

1. A process for preparing an o-alkylphenol, which comprises reacting at a temperature of 300°–500° C. a monohydric phenol unsubstitued at least one ortho position with a C_1–C_4 alkanol in the presence of a catalyst comprising at least 92% w/w, calculated as Fe_2O_3, of an oxide of iron, and 0.5–3% of one other metal oxide, in which the other metal is selected from the group consisting of Cd, Ti and Zr.

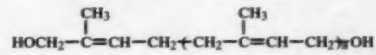
4,386,227

TWO-FUNCTIONAL-GROUP-CONTAINING TERPENOIDS

Akio Sato, Yatabe; Kenji Nakajima, Sakuramura; Yoshimasa Takahara, Narashino; Shizumasa Kijima, Nitta; Noriaki Kuwana, Aichi; Shinya Abe, Kawagoe, and Kouzi Yamada, Tokyo, all of Japan, assignors to Eisai Co., Ltd. and General Director of the Agency of Industrial Science and Technology, both of Tokyo, Japan

Division of Ser. No. 221,163, Dec. 29, 1980, Pat. No. 4,338,251. This application Mar. 22, 1982, Ser. No. 360,520
Claims priority, application Japan, Jan. 12, 1980, 55-2395
Int. Cl.³ C07C *33/035*
U.S. Cl. 568—875 **4 Claims**

1. A compound having the formula:



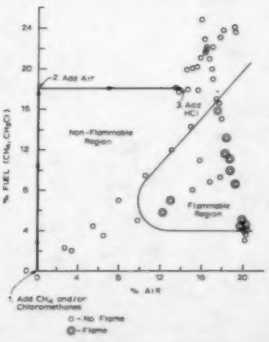
in which n is an integer of 3 to 5.

4,386,228

PROCESS FOR START-UP OF OXYCHLORINATION REACTION

Richard J. Ayen, Darien, Conn., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation-in-part of Ser. No. 844,754, Oct. 25, 1977, abandoned. This application Feb. 2, 1979, Ser. No. 8,824
Int. Cl.³ C07C *17/15*
U.S. Cl. 570—243 **6 Claims**



1. A method for initiating a continuous oxychlorination

process in which a material to be chlorinated selected from the group consisting of

methyl chloride

mixtures of two or more chlorinated derivatives of methane, and

mixtures of methane and one or more chlorinated derivatives thereof,

is contacted with hydrogen chloride and air in a fluidized bed reactor containing a fluidized bed of an oxychlorination catalyst, comprising the steps of:

(a) establishing a bed temperature of between about 150° C. and about 200° C. in the reactor;

(b) introducing a feed consisting essentially of the material to be chlorinated into the reactor;

(c) permitting the reactor to reach stable operating conditions;

(d) introducing either of the air or hydrogen chloride feeds into the reactor in a controlled manner;

(e) permitting the reactor to again reach stable operating conditions; and

(f) introducing the other of the air and hydrogen chloride feeds into the reactor in a controlled manner, said introduction of air in step (d) or (f) being done so as to prevent formation of explosive mixtures.

4,386,229

OLEFIN DIMERIZATION

Louis F. Heckelsberg; William T. Nelson; Sidney Schiff, and Ernest A. Zuech, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 132,560, Mar. 21, 1980, Pat. No. 4,319,064. This application Oct. 1, 1981, Ser. No. 307,452

Int. Cl.³ C07C *1/16*

U.S. Cl. 585—255 11 Claims

1. A process for producing a hydrocarbon oil comprising contacting an internal olefin having the formula

$$R—CH=CH—R'$$

wherein R and R′ which can be the same or different each represent an alkyl radical of 4–12 carbon atoms,

under dimerization conditions with alcohol-promoted boron halide as a dimerization catalyst to produce a mixture comprising said hydrocarbon oil.

4,386,230

HYDROCARBON CONVERSION

Philip J. Hogan, Runcorn; Allan Stewart, Frodsham, and Thomas V. Whittam, Darlington, all of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Dec. 17, 1981, Ser. No. 331,831

Claims priority, application United Kingdom, Dec. 17, 1980, 8040396

Int. Cl.³ C07C *2/68*

U.S. Cl. 585—467 6 Claims

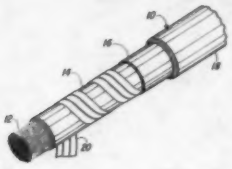
1. A method for the preparation of hydrocarbons which comprises contacting a hydrocarbon or oxyhydrocarbon under conversion conditions with a catalyst comprising zeolite Nu-5.

4,386,231

CABLE ASSEMBLY FOR DETECTING THE INGRESS OF WATER INSIDE A CABLE

David E. Vokey, Winnipeg, Canada, assignor to Canada Wire and Cable Limited, Toronto, Canada

Filed Apr. 28, 1981, Ser. No. 258,048
Claims priority, application Canada, Apr. 30, 1980, 350990
Int. Cl.³ H01B 7/32; G01R 31/08
U.S. Cl. 174—115 8 Claims



1. A telecommunications cable assembly for detecting the ingress of water inside the core of a telecommunications cable while being insensitive to the presence of water vapor in the cable, said cable assembly comprising

(a) a moisture detecting tape constructed of two spaced apart bare conductors laminated to an insulating plastic substrate and applied in an open helix around the core of the telecommunications cable;

(b) a plastic jacket extruded over the cable core and the moisture detecting tape; and

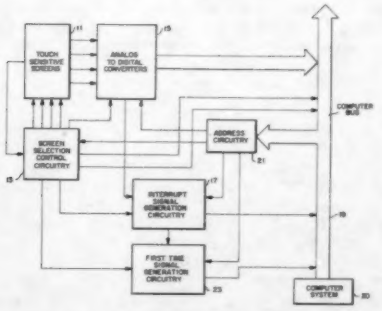
(c) means for connecting the conductors on the tape to a sensing device for detecting a measurable conductance change between the conductors in case water enters the cable jacket and bridges the gap between the two conductors.

4,386,232

MULTIPLEXED TOUCH SENSITIVE SCREEN SYSTEM

Billy R. Slater, Plano Collin, Tex., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Jun. 16, 1981, Ser. No. 274,112
Int. Cl.³ G08C 19/34
U.S. Cl. 178—18 14 Claims



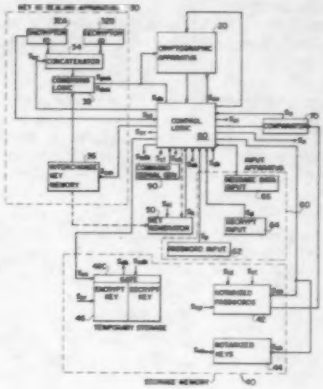
12. A position signaling system comprising a screen, readout means to detect periodically during spaced selection intervals whether an input to said screen is present and to generate signals representing the coordinates of the position of the input to said screen, and means operable when an input to said screen is present to indicate whether an input to said screen was present during the preceding selection interval.

4,386,233

CRYTOGRAPHIC KEY NOTARIZATION METHODS AND APPARATUS

Miles E. Smid, Silver Spring, and Dennis K. Branstad, Gaithersburg, both of Md.

Filed Sep. 29, 1980, Ser. No. 192,129
Int. Cl.³ H04L 9/00
U.S. Cl. 178—22.08 21 Claims



1. A method for notarizing a cryptographic key used in the encryption and decryption of data with a cryptographic function controlled by cryptographic keys such that the data encryptor and intended decryptor are positively identified, the method comprising the step of:

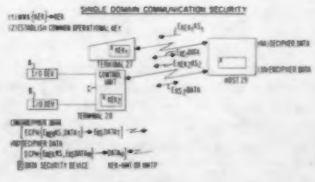
encrypting the cryptographic key with the cryptographic function using a notarizing key, derived from an identifier designation associated with the encryptor, an identifier designation associated with the intended decryptor, and an interchange key which is accessible only to authorized users of the cryptographic function, as the key encrypting cryptographic key.

4,386,234

CRYPTOGRAPHIC COMMUNICATION AND FILE SECURITY USING TERMINALS

William F. Ehrsam, Kingston; Robert C. Elander, Saugerties; Stephen M. Matyas, Poughkeepsie; Carl H. W. Meyer, Kingston; Robert L. Powers, West Hurley; Paul N. Prentice, Hyde Park; John L. Smith, and Walter L. Tuchman, both of Woodstock, all of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Dec. 5, 1977, Ser. No. 857,533
Int. Cl.³ H04L 9/04
U.S. Cl. 178—22.09 46 Claims



20. A data security device for performing a cryptographic operation comprising:

cipher key storage means storing a cipher key,

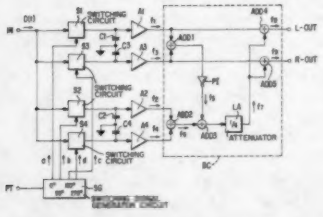
working key storage means,
first transfer means causing said cipher key to be transferred from said cipher key storage means to said working key storage means,
input/output storage means,
input control means controlling the writing of data into said input/output storage means representing an operational key enciphered under said cipher key,
data storage means,
second transfer means causing said data stored in said input-/output storage means to be transferred to said data storage means,
cipher means for performing a cipher function,
cipher control means causing said cipher means to decipher said data stored in said data storage means under control of said cipher key stored in said working key storage means to obtain data representing the operational key in clear form for storage in said input/output storage means, and
third transfer means causing said data representing the operational key in clear form to be transferred from said input-/output storage means to said working cipher key storage means as a working cipher key for subsequent cryptographic operations.

4,386,235

FM STEREO DEMODULATOR CIRCUIT

Michinori Naito, Tokyo, Japan, assignor to Trio Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 17, 1981, Ser. No. 234,962
Claims priority, application Japan, Feb. 21, 1980, 55-21638[U]
Int. Cl.³ H04H 5/00
U.S. Cl. 179—1 GE 2 Claims



1. An FM stereo demodulator for demodulating the left and right audio signals L and R from an FM stereo composite signal comprising

a switching signal generator for providing four asymmetrical square wave switching signals a, b, c and d whose phase differences from the subcarrier of the FM stereo composite signal are respectively 0°, 90°, 180°, and 270° and whose frequencies are the same as the frequency of the subcarrier;

four switching circuits for respectively switching the FM stereo composite signal using the four switching signals a, b, c, and d to respectively derive four product signals f_1, f_2, f_3, and f_4 where f_1 and f_3 each contain the L and R signals and an undesired beat signal in the audio frequency band, produced by the second harmonic component of the subcarrier and SCA signals contained in the FM stereo composite signal; and

means for removing the undesired beat signal from f_1 and f_3 including

means for adding f_2 and f_4;

means for adding f_1 and f_3;

means for deriving the undesired beat signal from (f_2+f_4) and (f_1+f_3); and

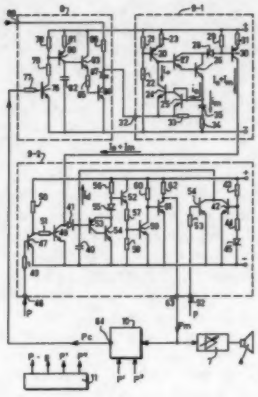
means responsive to the derived undesired beat signal for cancelling the undesired beat signal from f_1 and f_3.

4,386,236

AUTOMATIC SOUND LEVEL CONTROL OF TELEPHONE STATION

Gilbert M. M. Ferrieu, Bievres; Emmanuel Lefort, Montigny le Bretonneux, and Francoise Moliere, Paris, all of France, assignors to Telecommunications Radioelectriques et Telephoniques T.R.T., Paris, France

Filed Mar. 16, 1981, Ser. No. 244,359
Claims priority, application France, Mar. 28, 1980, 80 07055
Int. Cl.³ H04M 1/60
U.S. Cl. 179—1 VL 5 Claims



1. An arrangement for the automatic control of the sound level of a telephone station comprising:

a source of received voice signal,

a controllable attenuation circuit for producing a control signal for said received voice signal,

a pulse-duration modulator producing a signal which is formed from pulses the duration of which has been modulated by said voice signal supplied by said controllable attenuation circuit,

an overshoot detector which generates from the signal supplied from said modulator a compression pulse each time it is detected that the amplitude of the modulated voice signal reaches a certain threshold, and

said attenuation circuit comprising an integrating circuit,

said compression pulse being applied to said attenuation circuit for controlling the charging of said integrating circuit which produces the attenuation control signal.

4,386,237

NIC PROCESSOR USING VARIABLE PRECISION BLOCK QUANTIZATION

Krishnamoorthy Virupaksha, Brookeville, and Henri G. Suyderhoud, Potomac, both of Md., assignors to INTELSAT, Washington, D.C.

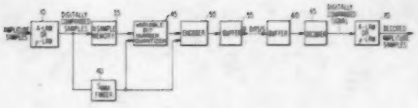
Filed Dec. 22, 1980, Ser. No. 218,976
Int. Cl.³ G10L 1/00
U.S. Cl. 179—15.55 R 23 Claims

1. An apparatus for encoding a block of N digital samples having sign and magnitude bits, being of the type wherein each of said N samples are quantized in a quantizer and the quantizer output is then encoded for transmission, said apparatus comprising:

maximum value finding means for finding the maximum value of said N samples;

bit number determining means for determining, as a function of said maximum value, the number of bits to be used in encoding said N samples;

step size determining means for determining, as a function of said maximum value, a quantizing step size for said N samples;



quantizing means for quantizing said samples in accordance with said step size to obtain quantized values; and

means for encoding said quantized values to produce N encoded samples each encoded with a number of bits determined by said bit number determining means.

4,386,238

Patent Not Issued For This Number

4,386,239

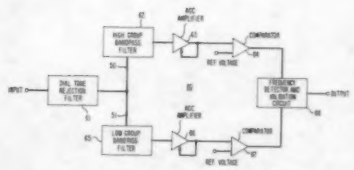
MULTIFREQUENCY TONE DETECTOR

Ta-Mu Chien, Freehold, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 17, 1980, Ser. No. 160,554

Int. Cl.³ H04M *1/50*

U.S. Cl. 179—84 VF **5 Claims**



1. A multifrequency tone receiver comprising:

first and second signal paths;

said first path including, in cascade, a first bandpass filter, an AGC amplifier, and a first signal comparator;

said second path including, in cascade, a second bandpass filter, and a second signal comparator;

means connecting the input ports of said first and second filters to a common signal path;

and means connecting the output ports of said first and second signal comparators to a frequency detector and validation circuit.

4,386,240

PUSH-BUTTON UNIT FOR TELEPHONE SETS

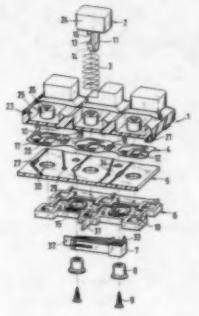
Gerd Philipp; Manfred Ramsaier, both of Stuttgart, and Albert Schach, Magstadt, all of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 8, 1980, Ser. No. 214,409

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1979, 2950665

Int. Cl.³ H01H *13/16, 63/16, 13/70*

U.S. Cl. 179—90 K **9 Claims**



1. Push-button unit for telephone sets with buttons arranged in rows and columns and each provided with a restoring spring and guided in a cover, which act on contact springs fitted between the cover and a printed-circuit board containing coding contacts, and on a slide movable below the printed circuit board transversely to the direction of travel of the buttons and designed to actuate a common contact for all buttons, wherein the contact springs of a row are integral parts of a strip which is secured in position between the cover and the printed-circuit board, and each of whose contact springs has a cutout through which extends a shaft of a respective button and whose edge is acted upon by actuating noses of the shaft, said shaft having a bevelled end, entering a corresponding opening in the slide which is supported by collar bushings fastened to the cover and resting against the printed circuit board, which moves the slide when the button is operated.

4,386,241

PIEZOELECTRIC LOUDSPEAKER

Kyoichi Maeda, Tokyo, Japan, assignor to Seikosha Co., Ltd., Tokyo, Japan

Filed Aug. 13, 1980, Ser. No. 177,599

Claims priority, application Japan, Aug. 16, 1979, 54-104438

Int. Cl.³ H04R *17/00*

U.S. Cl. 179—110 A **6 Claims**

1. A piezoelectric loudspeaker comprising: a support member having an opening therethrough; a generally circular pi-

ezoelectric vibrator disposed in said opening and being secured at its peripheral portion to said support member to enable the vibrator to be vibrationally driven during use of the piezoelectric loudspeaker; means for applying a driving signal to the piezoelectric vibrator to vibrationally drive the same over a wide frequency range; a vibratable member spaced from the vibrator and being secured at its peripheral portion to said support member to enable the vibratable member to undergo vibrational movement; and coupling means including a cylindrical coupling member for coupling a central annular region of said vibratable member to a central annular region of said vibrator to transmit vibrational movement of said vibrator to said vibratable member to thereby effect vibration of said vibratable member over a wide frequency range to produce a corresponding wide range of acoustic sounds.

2. A piezoelectric loudspeaker comprising: a support member having an opening therethrough; a generally circular piezoelectric vibrator disposed in said opening and being secured

at its peripheral portion to said support member to enable the vibrator to be vibrationally driven during use of the piezoelectric loudspeaker, the piezoelectric vibrator comprising a generally circular thin resilient plate secured at its peripheral portion to said support member, and a piezoelectric element affixed to at least one of the surfaces of the plate; means for applying a driving signal to the piezoelectric vibrator to vibrationally drive the same over a wide frequency range; a vibratable member spaced from the vibrator and being secured at its peripheral portion to said support member to enable the vibratable member to undergo vibrational movement; coupling means for coupling a central annular region of said vibratable member to a central annular region of said vibrator to transmit vibrational movement of said vibrator to said vibratable member to thereby effect vibration of said vibratable member over a wide frequency range to produce a corresponding wide range of acoustic sounds; and an adjusting mass disposed on the piezoelectric vibrator inside of the central annular region thereof for effectively reducing the frequencies of the main and secondary resonance modes of the piezoelectric vibrator.

4,386,242

IMPEDANCE MATCHING USING ACTIVE COUPLERS

Harold Seidel, Warren, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

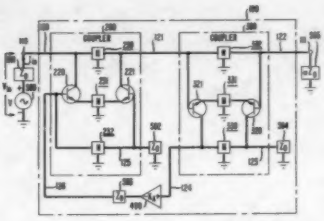
Filed Mar. 2, 1981, Ser. No. 239,340
Int. Cl.[3] **H03F** *3/62;* **H04M** *1/76*
U.S. Cl. 179—170 T **4 Claims**

1. Impedance matching circuitry (**100**) to compensate for a mismatch between a source impedance and a load impedance proportional to said source impedance, said circuitry comprising two directional couplers (**200** and **300**), each of said couplers further comprising

two active members (**220,221** or **320,321**), each having an emitting element, a control element and a collecting element,

first, second and third two-part networks **230–232** or **330–332**) connected, respectively, between said emitting element, said control element and said collecting element of said members, said networks arranged so that the symmetric mode transfer gain and the antisymmetric mode transfer gain, measured between said control elements and said collecting elements, are equal,

wherein said source impedance is connected to said collecting element of said first member of said first coupler and said load impedance is connected to said control element



of said first member of said second coupler, said circuitry characterized by

circuit means (**400,503**) unidirectionally coupling said collecting element of said second member of said second coupler to said control element of said first member of said first coupler, and

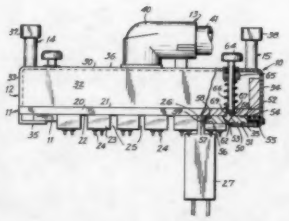
means (**121,502,504**) for connecting said collecting element of said second member of said first coupler to said control element of said second member of said second coupler, and for terminating both said control element of said second member of said first coupler and said collecting element of said first member of said second coupler with impedances equal to said source impedance.

4,386,243

TELEPHONE TEST SHOE HAVING RESILIENT LATCHING MEANS

Paul V. De Luca, Plandome Manor; Helmut Neuwirth, Garden City, and Robert Oddsen, Northport, all of N.Y., assignors to Porta Systems Corp., Syosset, N.Y.

Filed Aug. 4, 1981, Ser. No. 289,968
Int. Cl.[3] **H01R** *13/629*
U.S. Cl. 179—175.1 R **1 Claim**



1. An improved telephone test shoe for effecting an interface between test equipment and test points located on an outer surface of each of plurality of protector modules, each engaged upon a telephone connector block, comprising: a base plate element having a plurality of projections thereon including resiliently urged contact pins, said projections defining recesses for the accommodation of handle portions of said protector modules; a first laterally extending latch member slidably

associated with said base plate element and adapted to selectively engage undercut surfaces on said handle portions of said protector modules when disposed within said recesses; resilient means for urging said latch member to project into said recesses, and camming means accessible from an outer surface of said shoe selectively engaging said latch member to urge the same to withdraw when positioned; a second latch member and second camming means positioned in coplanar relation with respect to said first mentioned latch member and camming means, and operating in an opposite direction; and first and second handle means on an exposed surface of said shoe adjacent said first and second camming means, so positioned that engagement of the fingers of each hand of a user with a respective one of said handle means positions the thumb of the user for engagement of said camming means to permit said shoe to be manually supported for removal upon disengagement of said latch members.

4,386,244

ELECTROMAGNETIC TRANSDUCER

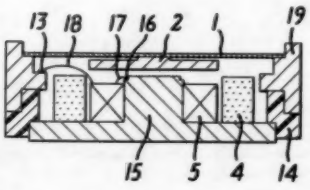
Fumikazu Murakami, Tokyo, and Shizuo Funayama, Kamagaya, both of Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Mar. 12, 1982, Ser. No. 357,578

Claims priority, application Japan, Mar. 20, 1981, 56-39773[U]

Int. Cl.³ H04R *9/02*

U.S. Cl. 179—179 **4 Claims**



1. An electromagnetic transducer comprising at least: a magnetic core body (**15**); a coil (**5**) mounted on the magnetic core body; a magnet (**4**); a vibration plate (**1**) spaced from the magnetic core body, coil (**5**) and magnet (**4**); a movable iron piece (**2**) fixed on the vibration plate; and a supporting frame (**19**) to support the periphery of the vibration plate (**1**), wherein one end of a coil terminal (**17, 18**) is connected with the magnetic core body and the other end of which is connected with the supporting frame made of metal to make an electrical connection.

4,386,245

NORMALLY-CLOSED SWITCHING MEANS WITH OVER-STROKE COMPENSATION

Koichi Nimura, Yao, and Tadao Nakamura, Sakai, both of Japan, assignors to Hosiden Electronics Co., Ltd., Osaka, Japan

Filed Jun. 11, 1981, Ser. No. 272,678

Int. Cl.³ H01H *13/70*; **H04M** *1/23, 1/50*

U.S. Cl. 200—5 R **3 Claims**

1. A normally-closed switch, permitting an over-stroke operation, comprising:

a frame member;

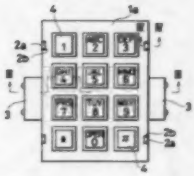
a fixed contact member attached to said frame member;

a plate spring member mounted in a cantilever fashion at one end to said frame member and extending in such a way that the free end thereof faces toward said fixed contact member;

operating means including an operating member supported for movement, away from and toward said fixed contact member, by said frame member and adapted to resiliently displace said plate spring member in the direction away from said fixed contact member when said operating member is pressed;

a movable contact member disposed at the free end of said plate spring member and adapted to be held at a switch closing position where said movable contact member comes into contact with said fixed contact member by spring-load of said plate spring member when said operating member is not pressed, and adapted to be moved in the direction away from said fixed contact member against the spring-load of said plate spring member when said operating member is pressed;

a stopper member mounted on said frame member at a position spaced from said plate spring member, when said operating member is not pressed, by a predetermined distance in the direction along which said plate spring



member is displaced by said operating member, said stopper member adapted to be contacted by said plate spring member when resiliently displaced through said predetermined distance, to prevent said plate spring member from being resiliently deformed beyond a predetermined amount; and

a resilient member disposed between said operating member and said plate spring member and adapted to hold them in a predetermined interlocking relationship when said plate spring member is not in contact with said stopper member, and adapted to be compressingly deformed to permit said operating member to perform an over-stroke operation in the direction toward said plate spring member when said operating member is further pressed after said plate spring member has come into contact with said stopper member.

4,386,246

SHIELD ASSEMBLY FOR 800 TO 1600 AMPERE CIRCUIT BREAKER COMPARTMENTS

Roger N. Castonguay, Terryville, Conn., assignor to General Electric Co., New York, N.Y.

Filed Dec. 7, 1981, Ser. No. 328,337

Int. Cl.³ H01H *9/00*

U.S. Cl. 200—50 AA **10 Claims**

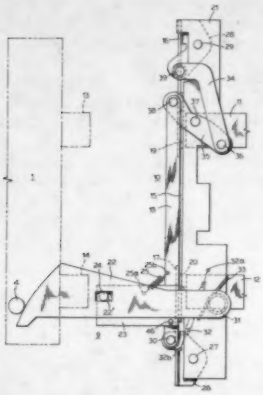
1. A shield assembly for insertion within circuit breaker compartments to isolate the line and power stabs within the compartment comprising:

a fixed shield for insertion within a circuit breaker compartment and having a top and a bottom slot for providing access to line and load stabs within said compartment;

a top and a bottom moveable shield connected together by a link arrangement to move away from each other to expose said access slots when said circuit breaker is at least partially withdrawn from said compartment and to move towards each other to cover said access slots when said circuit breaker is removed from said compartment;

a connecting link extending between said link arrangement and a link operating lever by means of an override spring for moving said connecting link in a downward direction

when said circuit breaker is inserted within said compartment; and



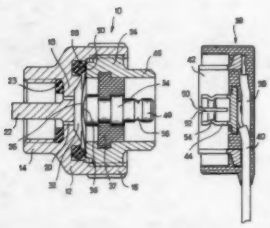
an actuator lever connected with said operating lever for moving said operating lever in a downward direction when said circuit breaker contacts said actuator lever.

4,386,247

TIRE PRESSURE PICK-UP

Serge Couat, Pantin, France, assignor to Societe Anonyme DBA, Paris, France

Filed Aug. 3, 1981, Ser. No. 289,021
Claims priority, application France, Aug. 5, 1980, 80 17286
Int. Cl.³ H01H *35/24*
U.S. Cl. 200—61.25 **10 Claims**



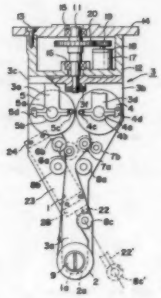
1. Pressure pick-up device for comparing a pressure to be measured with a reference pressure comprising a housing having a wall defining a chamber therewithin, a resilient diaphragm mounted in said chamber and shiftable between first and second conditions when the pressure differential across said diaphragm increases to a predetermined amount, said diaphragm having a pair of opposite sides, one of said sides being adapted for communication to the pressure to be measured, the other side being adapted for communication to the reference pressure, and switch means responsive to shifting of said diaphragm between said first and second conditions, said diaphragm having a concave portion and a peripheral outer edge circumscribing said diaphragm, said switch means including a seating member engaged by the concave portion of the diaphragm as the latter shifts between said first and second conditions, a peripheral portion of said diaphragm cooperating with the wall of the housing to define a space between the peripheral edge and the wall to permit free movement of said peripheral edge toward and away from the wall when diaphragm shifts between the first and second conditions.

4,386,248

ELECTRICAL MACHINING METHOD AND APPARATUS FOR FORMING A 3D SURFACE CONTOUR IN A WORKPIECE WITH A TRAVELING-WIRE ELECTRODE

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Continuation-in-part of Ser. No. 81,352, Oct. 3, 1979, Pat. No. 4,301,349. This application Sep. 10, 1980, Ser. No. 185,887
Claims priority, application Japan, Oct. 6, 1978, 53-123280; Dec. 14, 1978, 53-155569; Jun. 13, 1979, 54-75084; Sep. 14, 1979, 54-117404; Nov. 28, 1979, 54-153044
Int. Cl.³ B23P *1//12*
U.S. Cl. 219—69 W **16 Claims**



1. A method of electroerosively forming a contour in a workpiece with a continuous wire electrode, the method comprising the steps of:

axially transporting said continuous wire electrode continuously from a supply means to a takeup means along a continuous path of travel to continuously renew a machining surface of the electrode;

supporting the continuous wire electrode traveling between said supply and takeup means with guide means carried by a tool head and having an arcuate linear machining guide surface in said continuous path of travel to guide the traveling wire electrode over at least a portion of said arcuate machining guide surface;

positioning said guide means on said tool head so as to juxtapose said machining guide surface with said workpiece and so as to bring at least a portion of said wire electrode over said machining guide surface into an electroerosive machining relationship with said workpiece so that said portion of the continuously traveling wire electrode provides at least a portion of said continuously renewed machining surface;

passing an electroerosive machining current between said wire electrode and said workpiece across a fluid filled machining gap to remove material from a portion of the workpiece juxtaposed with said machining surface of the wire electrode; and

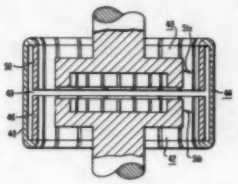
relatively displacing said tool head and said workpiece in translation so that said machining guide surface effectively moves along a predetermined contouring path in said workpiece, while rotating said guide means relative to said workpiece about a rotary axis which intersects said arcuate linear machining guide surface and said portion of the wire electrode thereon, thereby forming said contour in said workpiece.

4,386,249

VACUUM CIRCUIT INTERRUPTER WITH AUXILIARY CONTACT FOR PLURAL ARC PATH DEVICE WITH ARC ROTATING MEANS ASSOCIATED WITH THE PRIMARY AND AUXILIARY CONTACTS

Joseph G. Gorman, Murrysville, and James F. Roach, Oakmont, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 25, 1980, Ser. No. 210,429
Int. Cl.³ H01H 33/66
U.S. Cl. 200—144 B 7 Claims



1. A vacuum circuit interrupter comprising a hermetically sealed, evacuated cylindrical envelope having sealed end members, with conductive support rods extending therefrom within the envelope and supporting opposed primary electrical contacts which are movable relative to each other to carry current when the primary contacts are closed in electrical contacting relationship and between which primary contacts an arc forms upon movement of the primary contacts to open circuit spaced apart relationship, which primary electrical contacts are generally cup-shaped members with a planar base portion and an annular contactor portion extending from the base portion toward the opposed contactor, which primary contacts include integral means comprising a plurality of angled slots formed in the annular contactor portion for rotating the arc which forms between the annular contactor portions when the contactor portions are moved apart, an auxiliary cylindrical contact disposed spaced about the primary contact pair so that when the contactor portions of the primary contacts are spaced apart greater than the spacing between the auxiliary contact and the respective primary contacts and auxiliary path arc forms between the annular contactor portion of respective primary contacts and the auxiliary contact and the primary path arc is extinguished, and wherein the auxiliary contact includes integral means comprising a plurality of angled slots formed in the auxiliary cylindrical contact, which angled slots extend along substantially the full longitudinal extent of the auxiliary cylindrical contact for rotating the auxiliary path arcs formed between the auxiliary contact and the primary contact.

4,386,250

DEVICE FOR SEPARABLY ASSEMBLING TWO ENCLOSURES OF A CUT-OUT APPARATUS CONTAINING FLUID UNDER PRESSURE

Dante Nicoloso, Meyzieu, France, assignor to Societe Anonyme dite: Alsthom-Atlantique, Paris, France

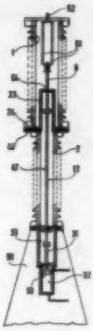
Filed Dec. 1, 1980, Ser. No. 211,999
Claims priority, application France, Nov. 30, 1979, 79 29498
Int. Cl.³ H01H 33/72
U.S. Cl. 200—148 R 6 Claims

1. In an electric cut-out apparatus, the combination comprising: a device for separately assembling and disassembling first and second end-to-end joined cylindrical enclosures of said electric cut-out apparatus while maintaining fluid seal integrity for respective enclosures, said enclosures being filled with a dielectric fluid under pressure, an operating rod passing axially through said enclosures for operating said cut-out apparatus with the compressed fluid in each of said enclosures being in communication with each other when the cut-out apparatus is in operation, the improvement wherein said device comprises:

a slidable sealing air lock intermediate of said end-to-end joined enclosures including first means for sealing said first enclosure and second means for sealing said second enclosure,

first and second separable portions which are fast with respective ones of said enclosures, and

said operating rod including, inside the air lock, means for separating said rod into first and second portions which are fast with respective ones of said enclosures, and



wherein said air lock includes a hollow piston surrounding the end of the first separable portion of said rod and defining a cylindrical space between said rod portion and the inside of said hollow piston,

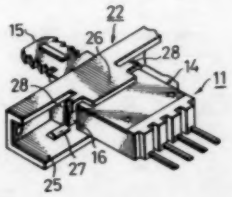
a boss on said first separable portion of said rod and sealably engaging a first portion of said piston to delimit one side of said air lock and a flange on said second separable portion of said rod sealably engaging a second portion of said piston and delimiting the other side of said air lock.

4,386,251

FIXTURE FOR PUSH-BUTTON SWITCH

Minoru Oyama, Furukawa, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Mar. 16, 1981, Ser. No. 244,090
Claims priority, application Japan, Mar. 14, 1980, 55-33162[U]
Int. Cl.³ H01H 9/00
U.S. Cl. 200—296 7 Claims



1. A fixture for holding at least one push-button switch of the type having an operating lever movable inwardly of the switch, comprising:

a mounting frame formed substantially into a U-shape in section and having a central surface having a respective opening for receiving each said operating lever, and opposing surfaces extending inwardly from said central surface; and

respective means including tongues extending from one of said opposing surfaces in directions substantially orthogonal to the direction of movement of the operating lever of each respective switch for holding each said switch to said

frame after said tongues have been bent around said switch while remaining orthogonal to the direction of movement of the operating lever of each said switch.

4,386,252

GANGED PUSH-BUTTON SWITCH

Shiro Kondo, and Michitada Akazawa, both of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Jun. 8, 1981, Ser. No. 271,264
Claims priority, application Japan, Jun. 9, 1980, 55-80223[U]
Int. Cl.³ H01H *13/74*
U.S. Cl. 200—296 **3 Claims**

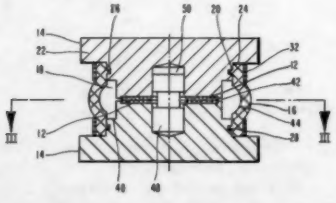
1. A ganged push-button switch having a plurality of push-button switch blocks each having an operation rod movable inwardly of the respective switch block to latchable position, the assembly having an interlocking plate common to said switch blocks and each of said switch blocks having a casing fitted in a respective opening formed in a metallic frame common to said switch blocks and a cover member in which said operation rod is slidable, wherein the improvement comprises that the casing for each switch block had a pair of resilient arms adapted for engagement with the respective opening of said frame, and that said cover member has a pair of retainers engageable with said casing and is provided at its portion projected forwardly from said frame with a groove which receives an engaging portion projected from said interlocking plate.

4,386,253

SWITCH

Johannes Neuser, Netphen, Fed. Rep. of Germany, assignor to Hundt & Weber Schaltgeräte GmbH, Freudenberg-Wilhelmshöhe, Fed. Rep. of Germany

Filed Nov. 14, 1980, Ser. No. 206,918
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1979, 2946124; May 28, 1980, 3020208
Int. Cl.³ H01H *35/32*
U.S. Cl. 200—302 **26 Claims**



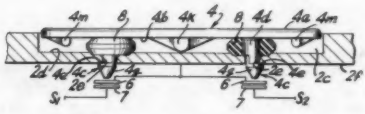
1. Switch comprising contact elements being carried opposite to each other by supporting plates which are actuatable by axially effective forces, a casing hermetically enclosing the contact elements, said casing being formed by the supporting plates and an annular membrane, the membrane being hermetically connected to the two supporting plates, characterized in that the annular membrane (**16**) is formed by bellows of flexible, electrically insulating, plastic material, the rims of the bellows being connected by means of clamping devices (**30**) to annular connection surfaces (**20**) of the supporting plate (**14**) surrounding the contact element (**12**), said annular connection comprising an annular notch into which fits a correspondingly formed annular bulge on the inner surface of the bellow rim, and said clamping device comprising a fine steel bond formed into a ring.

4,386,254

ROCKER SWITCH

Noel Eberhardt, and Stewart Carl, both of Cupertino, Calif., assignors to Timex Corporation, Waterbury, Conn.

Filed Jun. 15, 1981, Ser. No. 273,786
Int. Cl.³ H01H *3/00, 3/12*
U.S. Cl. 200—339 **23 Claims**



1. A rocker mechanism for use in an electronic watch having switch contact means enclosed within a housing, comprising:

(a) a wall of said housing defining a pair of spaced access holes providing access to the switch contact means inside said housing,

(b) a manually-operable actuator bar disposed adjacent the wall and having an accessible first side by which said actuator bar can be manually rocked and having a second side spaced from and facing the wall with a pair of spaced apart legs projecting from said second side through the access holes such that each leg can be urged to actuate said switch contact means by rocking said actuator bar,

(c) retaining means associated with said actuator bar for retaining the actuator bar legs in the wall,

(d) resilient washer means disposed around each of the legs between the second side of the actuator bar and the wall with portions of the washer means in contact with said second side and wall to provide sealing of said access holes and return-spring action for the actuator bar, and

(e) means associated with said actuator bar for limiting the movement of said bar when said switch contact means has been actuated.

4,386,255

SUSCEPTOR FOR ROTARY DISC REACTOR

Samuel Berkman, Florham Park, and John F. Corboy, Ringoes, both of N.J., assignors to RCA Corporation, New York, N.Y.

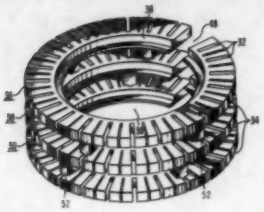
Continuation of Ser. No. 104,369, Dec. 17, 1979, abandoned, which is a continuation-in-part of Ser. No. 948,106, Oct. 3, 1978, abandoned. This application Sep. 8, 1981, Ser. No. 300,238
Int. Cl.³ H05B *6/10*; C23C *13/04*
U.S. Cl. 219—10.49 R **12 Claims**

1. In a susceptor comprising a plurality of discs adapted for use in a rotary disc reactor, the improvement comprising:

means for supporting said discs in a stack-like relationship wherein said discs are substantially parallel to each other, and

each of said discs having a plurality of radial openings formed adjacent the periphery of said disc and circumferentially spaced from each other such that the oppositely-flowing heating currents in the sectors disposed between said openings are forced to be adjacent each other to cause a cancelling effect, each of said discs also having a circular aperture disposed in the center thereof and a susceptor

plate adapted to fit within said aperture, each of said plates being of a susceptor material having a high electrical



conductivity relative to the susceptor material of said discs along the basal planes parallel thereto.

4,386,256

MACHINING METHOD AND APPARATUS

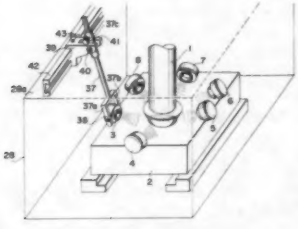
Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Continuation-in-part of Ser. No. 202,232, Oct. 30, 1980, and a continuation-in-part of Ser. No. 4,987, Jan. 19, 1979, Pat. No. 4,289,947. This application Jan. 6, 1981, Ser. No. 222,763

Claims priority, application Japan, Jan. 17, 1978, 53/2824[U]; Mar. 2, 1978, 53/25633[U]; Aug. 28, 1978, 53/117434[U]; Oct. 31, 1979, 54/139819; Oct. 31, 1979, 54/150169[U]; Nov. 8, 1979, 54/154160[U]; Nov. 28, 1979, 54/153042; Nov. 28, 1979, 54/153043

Int. Cl.³ B23P *1/08*

U.S. Cl. 219—69 M 25 Claims



1. A maching method wherein a workpiece is immersed in a machining liquid received in a worktank and a tool electrode is juxtaposed with the workpiece in the worktank to define a machining interface therebetween filled with the machining liquid, the method comprising the steps of:

disposing a plurality of ultrasonic assemblies in said machining liquid within said worktank in such manner that they are spaced apart from each other and from said machining interface and are oriented towards said machining interface so as to surround the region of said interface in a direct wave-transmitting relationship therewith through said machining liquid; and

individually energizing said assemblies respectively to generate separate beams of ultrasonic waves thereat each individually of a vibrational frequency between 0.05 and 10 MHz and transmitting said beams of ultrasonic waves jointly to the region of said machining interface through said machining liquid.

4,386,257

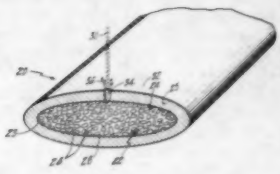
ALKALI METAL OXIDE FREE BACKERS FOR ENERGY BEAM DRILLING

John J. Brennan, Portland, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Mar. 2, 1981, Ser. No. 239,275

Int. Cl.³ B23K *27/00*

U.S. Cl. 219—121 EH 4 Claims



1. The method of drilling a hole with an energy beam, such as an electron beam, through a workpiece made of a metal alloy, wherein a backer comprised of a binder and ceramic particulate is contacted with the exit surface of the workpiece to generate gaseous products under action of the beam, characterized by said particulate being a glass selected from the group consisting of borosilicates and aluminosilicates and combinations thereof, the particulate comprised of a high temperature constituent in combination with at least 7 weight percent low temperature constituent and having an alkali metal oxide content of less than 1 weight percent, said high temperature constituent converting at least in part to a liquid during drilling and said low temperature constituent converting at least in part to a liquid due to action of the energy beam during drilling.

4,386,258

HIGH FREQUENCY MAGNETIC FIELD COUPLING ARC PLASMA REACTOR

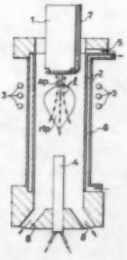
Kazuo Akashi, Matsudo; Toyonobu Yoshida, Tokyo, and Ryuichi Ishizuka, Tama, all of Japan, assignors to Nippon Mining Co., Ltd. and Asahi Kasei Kogyo Kabushiki Kaisha, both of Tokyo, Japan

Continuation of Ser. No. 64,705, Aug. 8, 1979, abandoned. This application Jul. 13, 1981, Ser. No. 282,695

Claims priority, application Japan, Aug. 28, 1978, 53-104630

Int. Cl.³ B23K *9/00*

U.S. Cl. 219—121 PM 8 Claims



1. A plasma reactor comprising:

a pipe in which a plasma flame is provided;

a d.c. arc plasma torch provided in the upper part of said pipe, said torch being formed by an inner cathode electrode surrounded by an outer anode electrode, the lower end of said cathode being positioned higher than the lower end of said anode;

a reaction material continuously introducing means, which is

opened in the vicinity of the arc plasma jet from said torch, for introducing reaction material into said arc plasma jet inside said pipe, said material introducing means comprising outlets positioned adjacent to said torch to downwardly direct said reaction material;

induction coil means, having a constant coil pitch for coupling a radio frequency electromagnetic field to the arc plasma jet to generate a radio frequency plasma within said pipe, said coil means surrounding said pipe in a manner such that said coil means and said torch have a common center line in the action zone of said arc plasma jet, the upper portion of said coil means being positioned closely adjacent said arc plasma torch in order to couple said arc plasma jet to said radio frequency plasma in the vicinity of said torch, so that the tail end of said arc plasma jet is located in the center of the upper portion of the radio frequency plasma, and so that the maximum volume of plasma flame is provided within said pipe;

cooling means adapted to supply cooling gas downwardly along the interior surface of said pipe, said cooling means comprising a cooling gas inlet at the upper portion of said pipe and a plurality of gas discharging outlets at the lower portion of said pipe for causing cooling gas to flow along the inside peripheral surface of said pipe; and

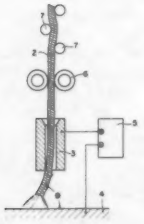
cooling jacket means disposed around the outside of said pipe for carrying flowing cooling water to cool said pipe.

4,386,259

ARC WELDING PROCESS USING A CONSUMABLE STRANDED WIRE ELECTRODE

Yasuhiro Nagai, Chigasaki; Toshisada Kashimura, Kamakura; Kunio Kaita, Kamakura, and Tetsuro Kawaberi, Kamakura, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Mar. 31, 1981, Ser. No. 249,499
Claims priority, application Japan, Apr. 8, 1980, 55-46428
Int. Cl.³ B23K *9/24, 9/00*
U.S. Cl. 219—137 R **14 Claims**



1. An arc welding process which comprises:

forming a consumable stranded wire electrode by integrally intertwisting a plurality of wire elements substantially of the same sectional area such that the lines connecting center points of adjacent wire elements do not form a regular polygon in a sectional plane;

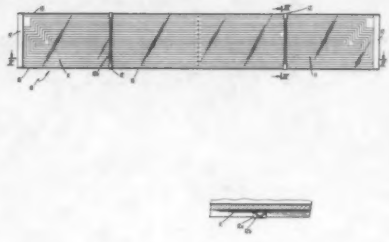
passing said consumable wire electrode through the interior of a hollow conducting tip having an inlet end, an outlet end and an inner periphery; and imparting a bending trait to said consumable wire electrode to contact said consumable wire electrode constantly with a surface on said inner periphery and at said outlet end of said conducting tip, providing an electrical potential between said tip and a material to be welded and directing said arc toward a center line of weld, wherein said consumable wire electrode is imparted with said bending trait with an amplitude of 5–60 mm when measured with respect to a segment forming an arc of 300 mm in length.

4,386,260

SUPPORTING ELEMENT FOR RADIANT HEATING MODULE

Mabel W. Zellers, P.O. Box 183, Reading, Pa. 19603

Filed Nov. 19, 1980, Ser. No. 208,377
Int. Cl.³ H05B *3/20*
U.S. Cl. 219—345 **5 Claims**



1. The combination comprising:

(a) an elongated open-sided housing including a back portion and two side portions extending along the opposed edges of the back portion,

(b) means mounting a rigid, glass, infrared heating panel in said housing, said glass panel having an outwardly facing radiating surface and being operatively disposed between the side portions and adjacent the back portion of the housing,

(c) an elongated supporting element having connecting sections attached to the side portions and an elongated bearing section extending between the side portions, said elongated bearing section being laterally spaced outwardly from the radiating surface so that the supporting element does not touch the panel during operative normal use of the heating glass panel,

(d) said supporting element having sufficient strength for the bearing section to hold said glass panel within said housing with the connecting sections attached when said glass panel is in an inoperative, flexible, sagging condition.

4,386,261

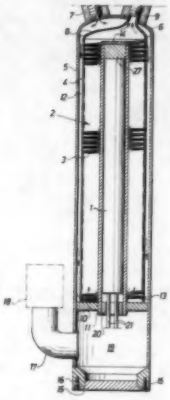
APPARATUS FOR HEATING BREATHING GAS FOR DIVERS

Nils O. H. Berglund, Älvsjö, and Per A. Olsson, Nyköping, both of Sweden, assignors to Studsvik Energiteknik AB, Nyköping, Sweden

PCT No. PCT/SE80/00143, § 371 Date Dec. 23, 1980, § 102(e) Date Dec. 23, 1980, PCT Pub. No. WO80/02541, PCT Pub. Date Nov. 27, 1980
PCT Filed May 14, 1980, Ser. No. 227,042
Claims priority, application Sweden, May 18, 1979, 7904392
Int. Cl.³ B63C *11/18, 11/28;* **H05B** *3/40*
U.S. Cl. 219—374 **4 Claims**

1. In an apparatus for heating breathing gas for divers, comprising an electrical heating element which is arranged to transfer heat to the breathing gas in a gas channel in a breathing gas equipment adapted to be carried by the diver by heat transfer through the wall of the gas channel, the improvement comprising a pressure vessel which is divided by a partition into a first gas tight chamber in which the gas channel is located, the channel surrounding the element, and a second chamber which is openable and arranged to house connection equipment for connecting a feed cable which extends from a current source located above the water surface to the heating element, said gas channel comprising two coaxial sections, the first section being defined by the inner wall of the pressure vessel and a mantle coaxial to said wall, and the other section being defined by the mantle and an envelope surrounding the element, the breathing gas being arranged to flow in the axial direction along at least part of the first section, and then to

flow in the opposite direction along the second section said envelope being provided with means for enlarging both the heat transfer surface facing the gas and the distance the gas flows in contact with the envelope, the first vessel chamber having a penetration for permitting breathing gas to be heated to flow into said first section for passage along the first section to the inlet of the second section, the pressure vessel being cylindrical, the heating element being a cylindrical cartridge which is inserted with tight fit into a gilled pipe having an external helical flange, the gilled pipe being surrounded by the mantle plate which adjoins or lies adjacent to the flange tops, an annular gap being arranged between the pressure vessel and



the mantle plate substantially along the entire length of the mantle plate in order to define said first channel section, the pressure vessel including an end cap having the penetration in the form of a first nozzle for leading cold breathing gas into the pressure vessel and to the annular gap, a hood being connected to the end of the mantle plate located adjacent to the end cap, a second nozzle being connected to the hood and extending through the end cap, an annular partition being tightly connected both to the inside of the pressure vessel and to a tube core of the gilled pipe, the gap being arranged to communicate with said second channel section adjacent the mantle plate end opposite the end cap, and the tube core being sealed at the pipe end adjacent the hood.

4,386,262

SPRUE BUSHING WITH CAST IN ELECTRICAL HEATING ELEMENT

Jobst U. Gellert, 233 Armstrong Ave., Georgetown, Ontario, Canada (L7G 4X5)

Division of Ser. No. 234,641, Feb. 17, 1981, Pat. No. 4,355,460, which is a continuation-in-part of Ser. No. 217,115, Dec. 17, 1980, abandoned. This application Mar. 15, 1982, Ser. No. 357,815

Claims priority, application Canada, Oct. 24, 1980, 363161

Int. Cl.³ F27B *14/00*

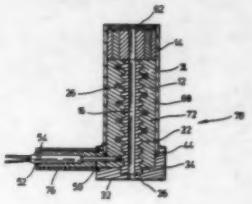
U.S. Cl. 219—424 **6 Claims**

1. An integral electrically heated sprue bushing comprising:

(a) a hollow elongated inner core portion extending between an enlarged front portion and an enlarged back collar portion, defining a central runner passage extending therethrough, the core portion, the enlarged front portion and the enlarged back collar portion being formed of a corrosion resistant material and having an outer surface;

(b) an electrically insulated helical heating element having a plurality of spaced coils encircling the inner core portion and lead wires extending through an aperture in the back collar portion, the inner helical diameter of the coil being greater than the maximum outer diameter of the outer surface of the inner core portion;

(c) an elongated outer sleeve portion formed of a corrosion resistant material extending between the front portion and the back portion to enclose a first space around the heating element between the front portion and the back portion;



(d) a highly thermally conductive metal portion cast into said space between the inner core portion and the outer sleeve portion to cast in the coils of the heating element; and

(e) a further sleeve portion with one end received in the aperture in the back collar portion to receive the lead wires extending therethrough, said further sleeve portion also being filled with highly conductive material to encase the portion of the lead wires extending therethrough.

4,386,263

ELECTRIC COOKER PLATE WITH A SWITCH FOR PREVENTING OVERHEATING

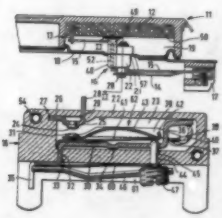
Karl Fischer, Am Gänsberg 23, D-7519 Oberderdingen, Fed. Rep. of Germany, and Felix Schreder, Oberderdingen, Fed. Rep. of Germany, assignors to Karl Fischer, Oberderdingen, Fed. Rep. of Germany

Filed Jul. 20, 1981, Ser. No. 285,144

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1980, 3027998

Int. Cl.³ H05B *3/68*

U.S. Cl. 219—449 **11 Claims**



1. An electric hotplate with an overheating safety switch which rests on the lower heated side of a hotplate body and is positioned in the heated annular zone of the hotplate, the safety switch including a bimetallic strip and a snap switch mounted in a chamber inside an extended housing and actuatable by the bimetallic strip, the housing projecting through a cover on the lower side of the hotplate body, the safety switch being urged against the lower side of the hotplate body by the cover and having connections for the snap switch and at least one lead-through passage for at least one connection line of the hotplate which is not controlled by the snap switch, comprising: projections on the housing having ends which rest against the lower side of the hotplate body and form an open chamber outside the housing; a transmission member projecting through an opening in the housing; and, the bimetallic strip being disposed

in the open chamber formed by the housing projections, extending lengthwise with the housing extension and acting on the transmission member, which transmits deflections of the bimetallic strip to the snap switch.

4,386,264

TILL GUARDS

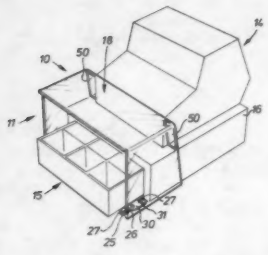
William G. Homer, 1 Wollaton Vale, Nottingham, England

Filed Mar. 26, 1980, Ser. No. 134,339

Claims priority, application United Kingdom, Mar. 26, 1979, 7910455

Int. Cl.³ G07G *1/00*

U.S. Cl. 235—1 R **10 Claims**



1. A guard for use with a cash till having a drawer slidably housed in the till body and which in its fully open position extends from the till body to permit access to the rear of the drawer, the guard including a pair of side barriers each of which, in use projects from the till body in the direction of opening movement of the drawer so as to prevent direct side access to at least the rear of the drawer when in its fully open position and a top barrier extending between the side barriers so as to extend across and directly above at least the rear of the drawer when in its fully open position.

4,386,265

ELECTRONIC CASH REGISTER

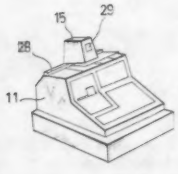
Hideo Sugimori, 12-2, Koaza Shimokubota, Ohaza Hohsono, Seikacho, Sohrakugun, Kyotofu, Japan

Filed Mar. 14, 1980, Ser. No. 130,464

Claims priority, application Japan, Apr. 4, 1979, 54-45195[U]

Int. Cl.³ G07G *5/00*; B41J *13/03*

U.S. Cl. 235—3 **8 Claims**



1. A three station printer electronic cash register comprising:

a central processing unit;

a two station printer for separately printing individual customer receipts and a transaction journal under the control of said central processing unit;

a keyboard for permitting an operator to enter input data for processing by said central processing unit;

a display for displaying output data processed by said central processing unit;

a frame for supporting said central processing unit, said two station printer, said keyboard and said display;

a main cabinet for housing said frame and said central processing unit, said two station printer, said keyboard and said display supported thereby, said cabinet having a top surface provided with a cut-away portion spaced above a corresponding surface of said frame, said top surface extending longitudinally across substantially the entire width of said cash register, said cabinet being further provided with a second surface provided with a display window area through which the data displayed by said display may be viewed by said operator, said second surface being disposed at a level lower than that of said top surface;

a slip tray for supporting a guest check slip paper;

slip feeding means for longitudinally feeding said guest check slip paper supported by said slip tray the distance of one line, said slip feeding means comprising a feed roller and a pinch roller selectively engageable therewith, said pinch roller and said feed roller being rotatable about respective axes oriented perpendicular to the direction of feeding;

slip printing means for printing a line of printed data on said guest check slip paper supported by said slip tray;

a slip feeder casing for housing said slip feeding means and said slip printing means, said slip feeder casing being provided with a forwardly facing slit to accept said slip tray, said slip feeder casing being thereby divided into two vertically opposed portions, one of which houses said feed roller and the other of which houses said pinch roller, said slip tray being provided with a cut-away portion contained within said slip feeder casing slit to permit the lower one of said feed roller and said pinch roller to make direct contact with a bottom surface of said guest check slip paper whereby when said pinch roller engages said drive roller, a rotating motion of said feed roller will result in a longitudinal motion of said guest check slip paper;

means for rigidly mounting said slip feeder casing to said frame with the lower one of said vertically opposed portions recessed into said main cabinet top surface cut-away portion such that said slip tray is disposed immediately above said main cabinet top surface, whereby said top surface will function to prevent the drooping of said guest check slip paper as it extends longitudinally beyond said slip tray;

guide means located at the rear of said top surface for facilitating the lateral positioning of said guest slip paper with respect to said feeding means such that the longitudinal axis of said guest check slip paper is oriented parallel to the longitudinal axis of said top surface and perpendicular to said pinch roller and feed roller rotational axes; and

index means for facilitating the longitudinal positioning of said guest check slip paper with respect to said printing means such that said line of printed data is printed at the desired starting line location on said guest check slip paper.

4,386,266

METHOD FOR OPERATING A TRANSACTION EXECUTION SYSTEM HAVING IMPROVED VERIFICATION OF PERSONAL IDENTIFICATION

Donald J. Chesarek, Los Gatos, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 11, 1980, Ser. No. 120,222

Int. Cl.³ G06K *5/00*

U.S. Cl. 235—380 **10 Claims**

1. A method for operating a transaction terminal to verify the authenticity of a personal identification number, the terminal including means operable by a terminal operator for entering said personal identification number and a data base access number, and communication means for sending data to and receiving data from a host system, the method comprising the steps of:

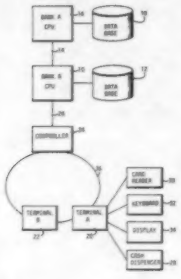
encrypting a personal identification number entered into said terminal according to first and second enciphering pro-

cesses to generate a twice encrypted identification number;

preparing a transaction request message, including a data base access number and said twice encrypted identification number;

transmitting said transaction request message onto said communication means;

receiving from said communication means a transaction reply message selectively approving, denying, or conditionally approving the transaction; the transaction reply message including encrypted validation data when the transaction is conditionally approved; and



responsive to a transaction reply message conditionally approving the transaction:

decrypting said validation data according to said first and second enciphering processes to generate deciphered validation data;

receiving from said terminal operator a reentered personal identification number; and

comparing said deciphered validation data with said reentered personal identification number and, responsive to favorable comparison of said deciphered validation data and said reentered personal identification number, generating a transaction approval signal.

4,386,267

COLOR ISOLATION METHOD

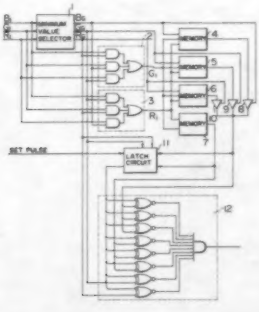
Mitsuhiko Yamada, Kyoto, Japan, assignor to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan

Filed Oct. 15, 1980, Ser. No. 197,030

Claims priority, application Japan, Oct. 22, 1979, 55-135194

Int. Cl.³ G01J *3/34*

U.S. Cl. 250—226 **10 Claims**



1. A color isolation method for isolating colors of individual portions of a colored picture comprising:

scanning said picture point by point to extract color components of each of said points;

comparing each of said color components with a reference color to provide a set of comparison signals;

converting said color components by use of said comparison signals to a set of vector signals wherein the number of vector signals is less than the number of said color components;

storing vectorial representations of combinations of said color components in a memory; and

addressing said memory with said vector signals and said comparison signals to extract vectorial representations of the color of successive ones of said points of said picture.

4,386,268

ENVELOPE FOR A PHOTODIODE

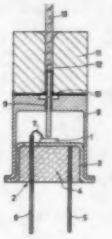
Hendrikus G. Kock, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 10, 1980, Ser. No. 205,817

Claims priority, application Netherlands, Nov. 23, 1979, 7908536

Int. Cl.³ G02B *5/14*

U.S. Cl. 250—227 **3 Claims**



1. An envelope for a photodiode which serves as a detector of light signals, said envelope comprising a support for the photodiode, a metal cap-shaped member fastened hermetically to the support and having an aperture above the photodiode, a metallized glass light conductor which is passed through said aperture of the cap-shaped member and which is soldered to said member in the aperture, one end of said light conductor extending towards the support for the photodiode and the other end thereof projecting from the cap-shaped member, a block-shaped member on the cap-shaped member, said block-shaped member comprising a bore which on one side houses the projecting end of the light conductor and on the other side houses an optical fiber which is optically coupled to the light conductor.

4,386,269

METHOD AND DEVICE FOR DETECTING LEAKS FROM PIPELINES

Richard J. Murphy, Sandy Lane, England, assignor to Avon Rubber Company Limited, Melksham, England

Filed Nov. 12, 1980, Ser. No. 206,087

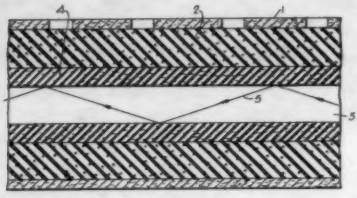
Claims priority, application United Kingdom, Nov. 15, 1979, 7939551; Jun. 6, 1980, 8018704

Int. Cl.³ G01M *3/38, 11/08*

U.S. Cl. 250—227 **11 Claims**

1. A device for use in combination with a light emitter and a light receiver in detecting a fluid leak from a contained volume adjacent said device and along which said device extends, the device comprising a fibre-optic core having a first refractive index, a sheath around said core of a second refractive index, there being a difference between said first and second refractive indices, the material of said sheath being solid and permeable and of a nature such that said second refractive index is altered by contact with leaked fluid from the contained volume, and protective means about the sheath for permitting access of leaked fluid to at least said sheath, pres-

ence of said fluid in said sheath tending to reverse said difference between said first and second refractive indices by acting



to alter said second refractive index and detectably alter the internal reflection characteristics of said core.

4,386,270

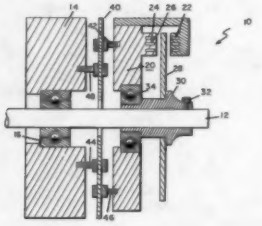
ANGULAR INFORMATION TRANSDUCER MOUNTING

Frederick D. Ezekiel, Lexington, Mass., assignor to Data Technology, Inc., Woburn, Mass.

Filed Jun. 8, 1981, Ser. No. 271,557

Int. Cl.³ H01J 3/14

U.S. Cl. 250—231 SE **10 Claims**



1. Angular information transducing apparatus for transducing angular information of a shaft relative to a first housing in which the shaft is rotatably mounted comprising,

angular information transducing means having a transducer housing and a transducer disc with said transducer housing including scanning means for providing a signal representative of angular information on the transducer disc,

means for mounting said disc upon said shaft in fixed angular relationship thereto,

means for mounting said transducer housing upon said shaft in relatively rotatable relationship therewith,

and resilient means for interconnecting said angular information transducing means and the assembly of said shaft and said housing for allowing relative axial movement therebetween while preventing relative angular movement about the shaft axis between the elements interconnected by said resilient means for maintaining the gap between said disc and said scanning means substantially constant in the presence of relative axial movement between said shaft and said first housing.

4,386,271

CLOCK GENERATOR

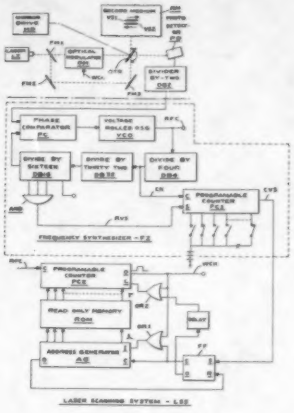
David Chiang, Dix Hills; Mosi Chu, Setauket, and Solomon Manber, Sands Point, all of N.Y., assignors to Amtech Patent Licensing Corporation, Miami Beach, Fla.

Filed Jul. 17, 1981, Ser. No. 284,185

Int. Cl.³ G06K 9/00

U.S. Cl. 250—234 **9 Claims**

1. A clock generator for establishing working clock pulses occurring for constant increments in a scan path of a scanner which cyclically sweeps over a record medium at a non-constant velocity, said generator comprising means for generating a fiducial pulse at least once per cycle of sweep, frequency synthesizer means responsive to the fiducial pulses for generating radio-frequency clock pulses having a frequency greater than the fiducial pulses, and in synchronization therewith, storage means for storing a plurality of count values, each of said count values being associated with a given increment along the scan path, working clock pulse generator means,



including counter means for counting the radio-frequency clock pulses, for emitting a working clock pulse each time the counter means has counted a count value received by the working clock pulse generator means, and means responsive to the working clock pulses for sequentially transmitting the count values stored in said storage means to said working clock pulse generator means.

4,386,272

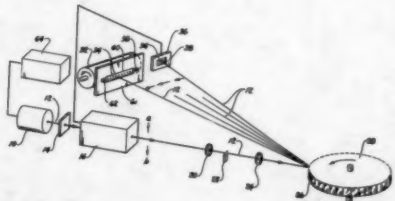
APPARATUS AND METHOD FOR GENERATING IMAGES BY PRODUCING LIGHT SPOTS OF DIFFERENT SIZES

Frank T. Check, Jr., Orange, and Ronald P. Sansone, Weston, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Continuation of Ser. No. 240,532, Mar. 4, 1981, abandoned, which is a division of Ser. No. 130,278, Mar. 4, 1980, Pat. No. 4,310,757, which is a division of Ser. No. 922,596, Jul. 7, 1978, Pat. No. 4,218,157. This application Jun. 22, 1982, Ser. No. 391,029

Int. Cl.³ H01J 3/14

U.S. Cl. 250—236 **7 Claims**



1. A method of producing on a photoreceptor an image of generated shapes made up of spots, comprising:

directing a plurality of beams of light toward a photoreceptor, each beam of light generating a spot on the photore-

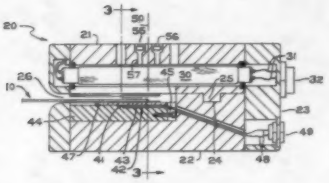
ceptor and controlling a parameter of the light beams to produce spots of different sizes whereby the appearance of smoothed edges are given to the generated shapes.

4,386,273

POSITIONER AND SLITTER FOR LAMINAR MATERIAL

Robert F. Jones, Westfield Center, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed May 1, 1980, Ser. No. 145,299
Int. Cl.³ B65H *35/02, 23/02*
U.S. Cl. 250—548 **23 Claims**



1. A device for positioning a material relative to a preselected reference position by sensing at least one edge of said material, said device comprising:

(A) stationary edge-sensing means including

(i) a substantially linear silicon solar cell for sensing said one edge so as to result in the generation within said cell of an output signal, said edge-sensing means also including,

(ii) a light source for providing substantially uniform illumination of at least a portion of said cell when said one edge is interposed between said light source and said cell, and

(iii) electrical circuit means selectively

(a) to maintain the intensity of said light substantially constant, and

(b) to compensate for changes in the intensity of said light,

(B) comparator means to compare said output signal to a reference value so as to obtain an error output signal,

(C) a work-performing means, including a positioning means for said material, and,

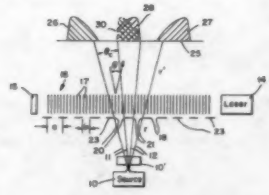
(D) drive means responsive to said error output signal, to move said material transversely and position it relative to said reference position as it is advanced longitudinally.

4,386,274

ISOTOPE SEPARATION BY STANDING WAVES

Saul Altshuler, 608 Fifteenth St., Manhattan Beach, Calif. 90266

Filed Nov. 10, 1980, Ser. No. 205,842
Int. Cl.³ H01J *39/34*
U.S. Cl. 250—251 **17 Claims**



1. Apparatus for separating isotopes comprising:

(a) means for generating a beam of particles having a desired and at least one other isotope;

(b) means for collimating the beam of particles into a plurality of beamlets;

(c) single means for generating a standing electromagnetic wave extending substantially at right angles to the path of the particles, said electromagnetic wave having a frequency substantially corresponding to an internal excitation level of the desired one of the isotopes, thereby to scatter particles of the desired isotope without substantially exciting the particles after scattering; and

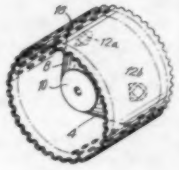
(d) means for collecting the particles including the desired isotope outside of the path of the collimated particles, the particles forming substantially spatially separated intensity peaks substantially in the plane defined by the particle beam and the electromagnetic wave.

4,386,275

APPARATUS AND METHOD FOR DETECTING THE PRESENCE OF A HEAT-EMITTING BODY

Sheldon Kalmowitz, Commack, N.Y.; Regis Beigel, Nashua; Eldon Sutphin, Manchester, both of N.H., and Charles McGhee, Woodside, N.Y., assignors to Energy Electronics, Inc., Danbury, Conn.

Filed Dec. 9, 1980, Ser. No. 214,666
Int. Cl.³ G01J *1/00*
U.S. Cl. 250—342 **3 Claims**



1. A sensor device for detecting the presence of a heat emitting body and for energizing an appliance controlled by said sensor device, in combination, comprising:

a housing having a truncated cone-shaped portion and a circular surface intersecting said housing at the truncated plane and a cylindrical portion at the base plane;

three two-cell sensors imbedded within said cone-shaped portion spaced equiangularly about the axis of said cone-shaped housing each having a window facing outwardly in a direction normal to said cone-shaped surface, one cell of each said sensor having an infrared sensing surface directed to a first field of vision overlapping the second field of vision of the other cell of each said sensor, said plurality of sensors covering a full field of view, each said sensor including means for producing an electrical signal indicative of said presence in response to a change in the amount of heat radiated within each said first and second fields of view;

a cylindrical shroud forming uniformly distributed apertures, said shroud being axially mounted on said housing at said cylindrical portion and extended along said housing beyond said circular surface, said shroud being disposed within said first and second fields of view of each sensor, and

electric circuiting means associated with said device for processing the electric signals received from said first and second cells of each of said two-cell sensor device, said circuiting means for each sensor including

load detector resistor means for conducting current generated at at each respective sensor as a result of an imbalance due to the sensing of a magnitude of infrared radiation received from a heat emitting body moving into said field of view of said each respective sensor to ground;

filtering capacity means for filtering resultant voltages across said load detector resistor means;

additional filtering capacitor means for receiving the filtered voltages from said filtering capacitor means and for additionally filtering said filtered voltages;

first voltage amplifier means having a positive and negative input for receiving and amplifying said filtered voltages from said additional filtering capacitor at said positive input;

biasing resistor means associated with said voltage amplifier means for maintaining the voltage at said positive and negative inputs of said voltage amplifier means equal under steady state conditions in the absence of a heat emitting body in said field of view of said each respective sensor;

decoupling capacitor means positioned at the power supply inputs to said voltage amplifier means;

resistor-capacity (RC) circuit means for filtering outputs of said voltage amplifier means to remove high frequency signal components;

gain control network means including a capacitor associated with a variable resistor for adjusting the output of said voltage amplifier, said gain control network means including a network capacitor and a variable resistor;

second voltage amplifier means having positive and negative inputs including a feedback resistor and a feedback highpass filter capacitor, said second voltage amplifier means being for receiving said output of said first voltage amplifier means via said gain control network means at said negative input;

input load resistor means connected to said positive input of said second voltage amplifier means;

said electric circuiting means further including circuiting for said three sensors combined including

first summing voltage amplifier means having a positive and a negative input including three first diodes; the anode of each diode being connected to each respective said second voltage amplifier means and the cathode therefore being connected to said negative input of said first summing voltage amplifier means; a feedback resistor means positioned between said three diodes and the output of said first summing voltage amplifier means; and voltage divider means for applying bias to said negative input of said first summing voltage amplifier means; and first output diode means positioned downcurrent of said first voltage amplifier; said first summing voltage means being for summing up the positive component output signals of said three sensors;

second summing voltage amplifier means including a second voltage amplifier having a positive and a negative input; three second diodes, the cathode of each diode being connected to each respective second voltage amplifier means and the anode therefore being connected to said positive input of said first summing voltage amplifier means; a feedback resistor means positioned between said positive input and the output of said second summing voltage amplifier means; voltage divider resistor means for applying bias to said positive input of said second summing voltage amplifier means; and second output diode means positioned downcurrent of said second voltage amplifier; said second summing voltage amplifier means being for summing up the negative component signals to a positive component signal;

node means for summing said positive outputs of said first and second summing voltage amplifiers wherein a positive voltage appears at said node means when at least one of said three sensors emits a current output resulting from the movement of a heat emitting body into said at least one sensor's field of view;

NAND gate means having first and second inputs, said first input being for receiving said positive voltage appearing at said node means, said NAND gate means also including a NAND gate resistor, said second input being positively biased through said NAND gate resistor;

clock divider circuit means for applying electrical output pulses derived from a 24 volt, 60 cycle AC power supply;

counter means for counting said pulses applied from said clock divider circuit and for receiving said output pulses of said NAND gate means, said counter means also being for to begin counting said pulses upon receipt of said output of said NAND gate means, said counter means including adjustable high signal count control means for sending a high signal, which is normally a low signal;

OR gate means for receiving and inverting said signal from said counter means, wherein when said counter means reaches the count programmed according to the settings of said adjustable high signal count means, the output of said OR gate means is driven low;

first inverter means for receiving said output signal from said OR gate and for inverting said signal;

first AND gate means having a first inverter input;

second AND gate means having a second inverter input;

second inverter means positioned between said first inverter means and said first AND gate means;

resistor means positioned between said first inverter means and said second inverter means and between said first inverter means and said second AND gate means;

capacitor means connected to said resistor down current from said first inverter;

said first AND gate means being for receiving the output of said first inverter and said second invertor via said resistor;

said second AND gate means being for receiving the output of said first inverter via said resistor and the output of said OR gate;

first transistor means including a first transistor resistor, said first transistor means being for receiving the output of said first AND gate via said first transistor resistor;

second transistor means including a second transistor resistor for receiving the output of said second AND gate;

first relay means including a first coil; a first relay diode connected in parallel with said first coil for transient suppression; and a relay resistor connected to the output of said first relay diode and said first coil;

second relay means including a second coil; a second relay diode connected in parallel with said second coil for transient suppression; and said relay resistor being connected to the output of said relay diode and said second coil;

first resistor means for receiving the signal from said first AND gate and first transistor means for receiving said signal from said first resistor means, said first resistor means being for keeping said first transistor normally turned off;

second resistor means for receiving the signal from said second AND gate and second transistor means for receiving said signal from said second resistor means, said second resistor means being for keeping said second transistor normally turned off;

said relay resistor being connected to a positive DC potential for applying current pulses to said first relay coil when said first transistor means is momentarily rendered conducting and for applying current pulses to said second relay coil when said second transistor means is rendered conducting;

said first relay coil being adapted to latch said first relay means to switch and to be latched in the "off" state to de-energize said appliance which is being controlled by said sensor appliance; and

said second relay coil being adapted to latch said first relay means to switch to the "on" state thereby energizing said appliance which is being controlled by said sensor appliance.

4,386,276

METHOD AND APPARATUS FOR PRODUCING AN IONIZED GAS BY RADIATION

Sinjitsu Tateno, 3-8 Nagara-sakurai-cho, Gifu City, Japan

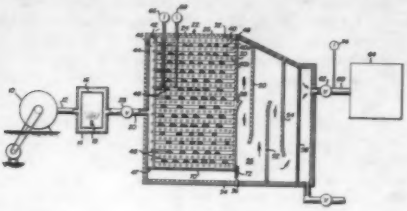
Continuation-in-part of Ser. No. 63,207, Aug. 3, 1979, abandoned, which is a continuation-in-part of Ser. No. 806,912, Jun. 15, 1977, abandoned. This application Nov. 4, 1981, Ser. No. 318,035

Int. Cl.³ G01N *23/00*

U.S. Cl. 250—436 **8 Claims**

1. Apparatus for producing an ionized gas which comprises a gas propelling device, container means coupled to the outlet side of said device for selectively controlling humidity and temperature of the gas passing therethrough, a reaction chamber coupled at its inlet side to the outlet side of said container means, supporting means within said reaction chamber for a radioactive substance therein capable of generating alpha radi-

ation, and means coupled to the outlet side of said reaction chamber for substantially removing the radioactivity from the



resulting humidity and temperature controlled gas subjected to alpha radiation passing therethrough.

4,386,277

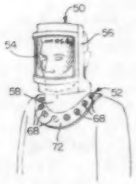
X-RAY FACE MASK AND BIB DEVICE

David J. Forshee, Oxford, Mich., assignor to Samuel Moti, Grosse Pointe Farms, Mich.

Filed Oct. 20, 1980, Ser. No. 198,599

Int. Cl.³ G21F *3/02*

U.S. Cl. 250—516.1 **28 Claims**



1. An improved device for shielding and protecting a person against direct and scatter x-ray radiation to the face, head and neck, and to be worn on the shoulders of such person, wherein the improvement comprises

a radiation shielding face mask comprising

a lead-filled relatively clear transparent radiation shielding lens, a frame composed of a molded plastic material for said lens secured thereto in face and head shielding posture, said frame further comprising radiation shielding chin and neck overlying portions, at least part of said chin overlying portion extending generally inward below the chin of said person and at least part of said neck overlying portion extending generally vertically from an inward portion of said chin overlying portion and extending rearwardly adjacent at least one lateral side of the neck of said person when said device is worn by said person, and a distal lip extending from said neck overlying portion, said chin and neck overlying portions being substantially continuous with said frame and integrally formed with said frame, at least said chin and neck overlying portions further including a radiation-shielding lead lining on their inner surfaces, and

a radiation shielding bib for the upper chest portion of said person removably attached to said distal lip.

4,386,278

WIRING HARNESS FOR MOTORCYCLES

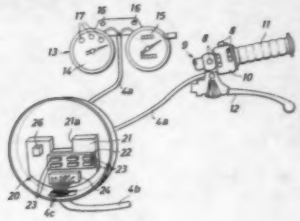
Shigeo Kawada, Wako; Fumiyoshi Akaku, Suzaka, and Seiki Yukawa, Yokkaichi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha; Sumitomo Electric Industries, Ltd. and Tokai Electric Wire Company, Limited, all of, Japan

Filed May 22, 1981, Ser. No. 266,496

Claims priority, application Japan, May 26, 1980, 55-72168[U]

Int. Cl.³ H02B *1/04*; H01H *85/20*

U.S. Cl. 307—9 **6 Claims**



1. In a wiring harness for a motorcycle including: a power source disposed substantially at a central portion of a vehicle body of said motorcycle; a main cable having a main switch connected to said power source; a plurality of load circuits including subfuses and operation switches therefor; and wherein said operation switches are arranged on and in the vicinity of a steering portion of said motorcycle, the improvement comprising:

a junction box collectively accommodating therein a plurality of electrical circuits including said subfuses and at least one connector connecting said main cable with said load circuits; and

said junction box being disposed in a space defined behind a reflector in a casing of a headlight disposed in a front portion of said vehicle body of said motorcycle.

4,386,279

SWITCH APPARATUS FOR VEHICLE

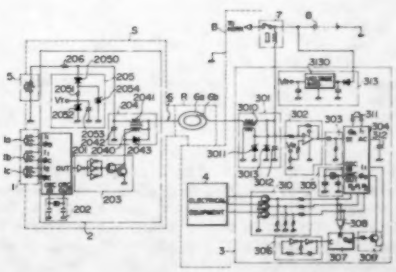
Tomohisa Yoshimi, Gamagori; Akira Kuno, Oobu, and Yoshio Shinoda, Aichi, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Mar. 25, 1981, Ser. No. 247,550

Claims priority, application Japan, Apr. 2, 1980, 55/43354; May 14, 1980, 55/66573[U]; May 22, 1980, 55/68250

Int. Cl.³ H02G *3/00*; H01H *25/04*

U.S. Cl. 307—10 R **10 Claims**



1. A switch apparatus for use in a vehicle comprising:

a signal transmitting unit disposed in a steering wheel provided with an electrical switch;

a signal receiving unit disposed in the body of the vehicle; and

a current path disposed in a rotation transmission mechanism supported in said vehicle body for rotatably supporting said steering wheel, said current path supplying a DC signal from said electrical switch to said signal receiving unit;

wherein said signal transmitting unit includes a plurality of additional electrical switches, signal generating means for generating a signal having a frequency indicative of information provided by manipulation of a selected one of said additional electrical switches, signal superposing means for superposing the signal frequency generated from said signal generating means on said DC signal supplied by way of said current path, and voltage regulating means for generating a regulated voltage related to said DC signal and supplying it to said signal generating means; and

wherein said signal receiving unit includes signal extracting means for extracting said signal frequency supplied by way of said current path in the relation superposed on said DC signal, and signal decoding means for decoding said extracted signal frequency.

4,386,280

REMOVABLE CONTACTLESS TRANSMISSION CLAMP ASSEMBLY SYSTEM

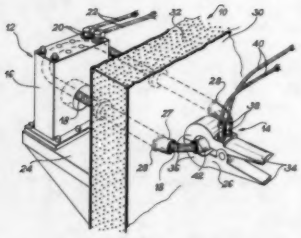
Jean-Louis Ricaud, Bourg La Reine; Pierre R. Briez, Fontenay le Fleury, and Pierre Sajot, Beynes, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed May 1, 1980, Ser. No. 145,753

Claims priority, application France, May 7, 1979, 7911469

Int. Cl.³ H01F *23/00*

U.S. Cl. 307—145 **10 Claims**



1. Apparatus for electrical transmission, comprising a mains transformer and at least one distribution transformer, these transformers having a common winding consisting of at least one spiral which defines the secondary winding of the mains transformer and the primary winding of the distribution transformer, the secondary winding of the distribution transformer being mounted in a clamping means which comprises roller bearings capable of rolling on cam surfaces suitable for controlling the opening and closing of the clamp when the latter moves in a specified direction.

4,386,281

CIRCUIT FOR DETECTING LOSS OF SUPPLY VOLTAGE

Michael B. Terry, Dallas, Tex., assignor to Mostek Corporation, Carrollton, Tex.

PCT No. PCT/US81/00060, § 371 Date Jan. 15, 1981, § 102(e) Date Jan. 15, 1981, PCT Pub. No. WO82/02463, PCT Pub. Date Jul. 22, 1982

PCT Filed Jan. 15, 1981, Ser. No. 273,841

Int. Cl.³ H03K *17/08*

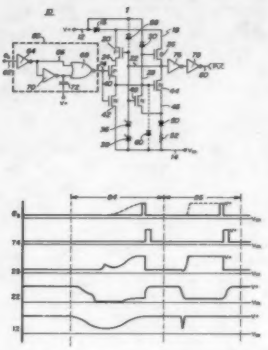
U.S. Cl. 307—200 B **9 Claims**

1. A circuit for detecting a reduction and increase in the supply voltage thereto, comprising:

first and second power terminals adapted to receive said supply voltage;

a latch circuit having cross-coupled first and second nodes which are driven to set said latch circuit to a first state or a second state, said latch circuit connected to said first and second power terminals;

first means connected between said latch circuit and said first power terminal for switching said latch circuit to said



first state in response to rapid rate increases in said supply voltage;

second means connected between said latch circuit and said second power terminal for switching said latch circuit to said first state in response to slow rate increases in said supply voltage increases; and

means for driving said latch circuit to said second state upon receipt of a reset signal.

4,386,282

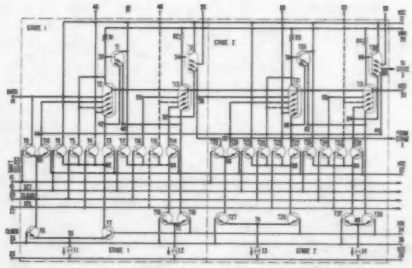
EMITTER FUNCTION LOGIC (EFL) SHIFT REGISTER

Robert J. Scavuzzo, Springfield Township, Bucks County, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 29, 1980, Ser. No. 191,393

Int. Cl.³ H03K *3/289, 3/35, 19/086*

U.S. Cl. 377—81 **12 Claims**



9. A circuit comprising:

an EFL-type storage cell having a plurality of control terminals and an output terminal;

first, second, and third control circuit means each having input terminals which serve as circuit input terminals and having output terminals;

the first control circuit means having a first output terminal coupled to a first output terminal of the second control circuit means and having a second output terminal cou-

pled to a first output terminal of the third control circuit means;

a second output terminal of the second control circuit means being coupled to the storage cell; and

a second output terminal of the third control circuit means being coupled to the storage cell.

4,386,283

PROCESS FOR THE CUTTING-OFF OF A THYRISTOR

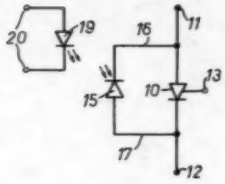
Peter Roggwiller, Neerach-Riedt, and Roland Sittig, Umiken, both of Switzerland, assignors to BBC, Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Aug. 28, 1980, Ser. No. 182,047

Claims priority, application Switzerland, Aug. 31, 1979, 7894/79

Int. Cl.³ H03K *17/72*

U.S. Cl. 307—252 R **9 Claims**



1. A process for switching-off of a thyristor by means of at least one semiconductor diode connected in antiparallel to the thyristor, said thyristor exhibiting a predetermined turn-off time and adapted to conduct a load current resulting in a voltage drop across said thyristor, wherein said diode takes over conduction of the load current of the thyristor for a period of time which corresponds at least to the turn-off time of the thyristor, comprising:

producing a photocurrent in the semiconductor diode with a current intensity at least as great as the magnitude of the instantaneous value of the thyristor load current;

whereby said photocurrent produces a voltage difference across said diode which is lower than the voltage drop across the current-conducting thyristor.

4,386,284

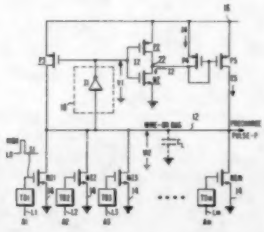
PULSE GENERATING CIRCUIT USING CURRENT SOURCE

Ihor T. Wacyk, Bridgewater, and Roger G. Stewart, Neshanic Station, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Feb. 6, 1981, Ser. No. 232,360

Int. Cl.³ H03K *5/01, 19/017, 17/687*

U.S. Cl. 307—260 **10 Claims**



1. The combination comprising:

a line;

a first plurality of transistors having their conduction paths connected in parallel between said output line and a first point of potential; each one of said plurality of transistors when ON tending to clamp said line to said first point of potential;

load means comprising a controllable impedance means and a controllable relatively constant current source connected in parallel with said controllable impedance means between said line and a second point of potential;

means responsive to the voltage on said line connected to said controllable impedance means for switching it to its highest impedance value when the voltage on said line is being clamped to said first point of potential; and

means responsive to the voltage on said line coupled to said current source for turning it on a given time delay after the voltage on said line is being clamped to said first point of potential, said current source, when turned-on, supplying a current to said line tending to restore its voltage to the level at said second point of potential.

4,386,285

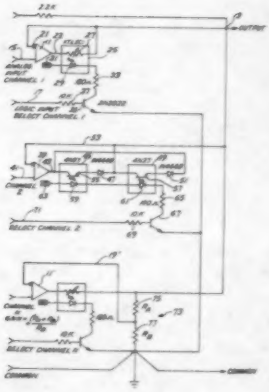
DIGITALLY CONTROLLABLE ANALOG SWITCH

David O. Neathery, St. Charles, and Edward J. Riggs, West Chicago, both of Ill., assignors to King Instrument Corporation, Westboro, Mass.

Filed Oct. 31, 1980, Ser. No. 202,669

Int. Cl.³ H03K *17/56, 3/42*

U.S. Cl. 307—311 **8 Claims**



1. An analog switch for generating a representation of an analog input signal responsive to a predetermined logic state of a digital control signal, said switch comprising:

an analog signal input terminal for receiving said analog input signal;

an analog signal output terminal for providing said representation;

operational amplifier means including (1) a non-inverting input terminal coupled to said analog signal input terminal, (2) an inverting input terminal, and (3) an output terminal coupled to said analog signal output terminal;

variable impedance means connected between the output and inverting input terminals of said amplifier and adapted to vary its electrical impedance responsively to an optical signal;

a digital signal input terminal for receiving said digital control signal;

optical signal generating means electrically isolated from said variable impedance means for generating said optical signal in response to an energizing signal, and switching means coupled to said digital input terminal and adapted to be conductive in response to said digital control signal

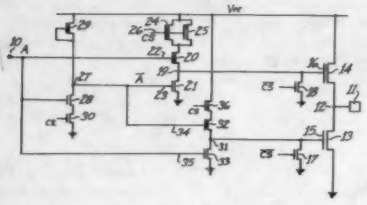
so as to generate said energizing signal, and non-conductive in the absence of said digital control signal.

4,386,286

HIGH CURRENT STATIC MOS OUTPUT BUFFER CIRCUIT FOR POWER-DOWN MODE OF OPERATION

Chang-Kiang Kuo, Austin, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 7, 1980, Ser. No. 110,288
Int. Cl.³ H03K *17/04, 17/687*; G01C *8/00*
U.S. Cl. 307—581 **16 Claims**



1. In a circuit having an output transistor including a current path and a control electrode, a circuit input coupled to said control electrode to turn said current path on and off, an output node, and means connecting the current path of the output transistor between a voltage supply and said output node,

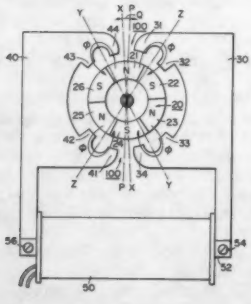
the improvement comprising: a pair of transistors having parallel current paths and a common control electrode, means connecting said parallel current paths between said voltage supply and said control electrode of said output transistor, one of said pair of transistors having a threshold voltage of the polarity of said voltage supply and the other having a threshold voltage which is zero or a small voltage of the opposite polarity.

4,386,287

SYNCHRONOUS MOTOR FOR TIMEPIECE

Setsuyuki Karasawa, Tokyo; Minosaku Aso, Showa; Yoshinori Goto, Ohmiya, and Akira Nikaido, Tokorozawa, all of Japan, assignors to Rhythm Watch Co., Ltd. and Citizen Watch Co., Ltd., both of Tokyo, Japan

Continuation of Ser. No. 74,487, Sep. 11, 1979, abandoned. This application Feb. 23, 1981, Ser. No. 236,910
Claims priority, application Japan, Sep. 20, 1978, 53/115438
Int. Cl.³ H02K *21/18*
U.S. Cl. 310—49 R **4 Claims**



1. A synchronous motor for a timepiece having:

a rotor having a plurality of magnetized rotor poles about its circumference;

a stator having a plurality of stator poles arranged around the vicinity of said rotor separated by an air gap; and

an energizing coil supplying alternating magnetic flux to said stator;

wherein the improvement comprises:

at least the number of rotor poles of said rotor is 6 and the number of stator poles is 8;

said stator poles comprise alternately arranged main and supplementary poles, said main poles being provided in a clockwise forward position from said supplementary poles;

air gap between said stator supplementary poles and said rotor is wider than an air gap between said stator main poles and said rotor such that the magnetic coupling power of the supplementary poles with the rotor poles is always less than the coupling power of the main poles with the rotor poles so that the direction of self-starting rotation can be restricted to a specific direction;

a static central position of said rotor is substantially at a center of dynamic magnetic center lines of said stator to eliminate imbalance existing in self-starting driving power with regard to direction of rotation at the time of self-starting; and

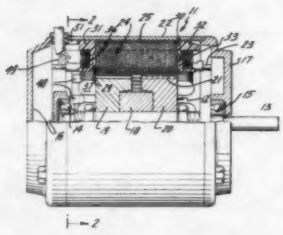
a pitch angle of adjoining said stator poles is 0.5 or 1.5 times a pitch angle of said rotor poles and said pitch angle of said adjoining stator poles is 30° or 90°.

4,386,288

STEPPING MOTORS HAVING DETENTED WINDING AND WINDING METHOD

William H. Laurie, Plainville, Conn., assignor to The Superior Electric Company, Bristol, Conn.

Filed May 26, 1981, Ser. No. 266,729
Int. Cl.³ H02K *47/00*
U.S. Cl. 310—49 R **7 Claims**



1. An electric motor comprising a rotor and a stator, said stator including a pole-structure unit of paramagnetic material comprising an annular portion surrounding and spaced from said rotor and having a plurality of poles mutually spaced apart arcuately and extending from said annular portion toward said rotor, plural windings each consisting of a continuous length of wire and each winding including coils on a plurality of said poles and insulated therefrom, each of said windings having connecting wire portions serially interconnecting the coils thereof, and plural detent means in respective positions essentially outside the endwise extensions of the interpole spaces for holding said connecting wire portions in position, said connecting wire portions being essentially free of slack.

4,386,289

DEVICE FOR COOLING A SUPERCONDUCTING FIELD WINDING AND A DAMPER SHIELD OF THE ROTOR OF AN ELECTRIC MACHINE

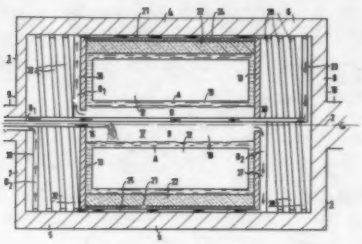
Lutz Intichar; Christoph Schnapper, both of Erlangen, and Erich Weghaupt, Mulheim am Rhein, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jun. 1, 1981, Ser. No. 268,917

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1980, 3020831

Int. Cl.³ H02K *9/00*

U.S. Cl. 310—52 5 Claims



1. In a device for cooling a superconducting field winding in the rotor of an electric machine, especially a turbo-generator, said device including at least one coolant space which contains, in the operating condition, a vaporous and a liquid phase of a cryogenic coolant which is fed in from outside the rotor; coolant paths going through the field winding which are connected to the liquid space of the coolant space occupied by the liquid phase; at least one coolant exhaust line which leads to outside the rotor and is connected to the vapor space of the coolant space occupied by the gaseous phase, said exhaust line connected thermally to an end piece at the end face of a torque transmitting hollow-cylindrical rotor body part; and at least one coolant line extending along a damper shield which surrounds the field winding and is to be deep-cooled, and arranged in the region of the superconducting field winding at the torque-transmitting rotor body part, said damper shield thermally insulated from the field winding by a hollow cylindrical body of solid insulating material, the improvement comprising the coolant line of the damper shield being a section of the coolant exhaust gas line, said section of the coolant exhaust gas line arranged, as seen in the flow direction of the coolant exhaust gas, ahead of the line section of the coolant exhaust line which is thermally connected to the end piece of the torque-transmitting rotor body part at the end face.

4,386,290

CENTRIFUGAL ACTUATOR FOR A.C. INDUCTION MOTOR

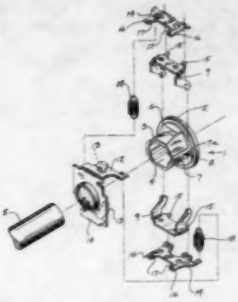
Gerald J. Monette, Wausau, Wis., assignor to Marathon Electric Manufacturing Corp., Wausau, Wis.

Filed Apr. 30, 1981, Ser. No. 259,024

Int. Cl.³ H02K *11/00*

U.S. Cl. 310—68 E 4 Claims

1. A centrifugal actuator comprising a hub having switch actuating means at one end of the hub for engaging a switch having contacts movable between a first circuit position and a second circuit position, said hub having a body portion connected to the hub and extending from the switch actuating means and disposed to be assembled on a shaft of an electric motor for rotation by the shaft, a base member of magnetic material assembled over the body portion opposite the switch means and comprising an elongated base located adjacent to the motor and side members connected to the base which combine with the base to block the flow of magnetic flux from the windings of the motor to the internal parts of the centrifugal actuator, a plurality of oppositely disposed weights pivoted together around the hub body portion and pivoting to a position under centrifugal force to move the body portion and the hub and thereby to move the contacts of the switch from said first circuit position to said second circuit position, and springs



secured at one end of the side members and at the other end to the weights and extending diametrically over the body of the hub and on opposite sides thereof to return the actuator to a rest position when the motor shaft is no longer rotating to pivot the weights outwardly by centrifugal action and return the contacts from the second circuit position to the first circuit position.

4,386,291

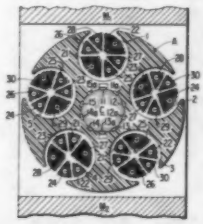
MULTI-LEVEL ARMATURE WINDING FOR SINGLE AIR GAP MOTOR

John A. Herr, Garwood, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Dec. 11, 1981, Ser. No. 329,631

Int. Cl.³ H02K *3/16*

U.S. Cl. 310—225 8 Claims



1. In a single air gap motor, an armature with a plurality of symmetrically distributed longitudinal slots; a commutator on the armature with equally spaced discrete segments, the number of segments being twice the number of armature slots; and a plurality of coils some of which are wound on the armature to extend through the armature slots at one level and others of which are wound to extend through the slots at another level, the coils at the one level having the same number of turns as the coils at the other level and the turns being distributed around the armature to provide the same number of coil wires at each of the different levels in the slots; said coils being symmetrically distributed around the armature and correspondingly connected in series one to another through the commutator segments with the different level coils in the connection arranged to alternate with one another and with the segments to balance out induced back E.M.F. in the series

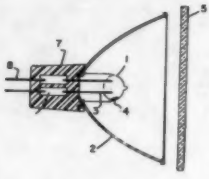
connection and thereby prevent back torque on the armature during operation of the motor.

4,386,292

PROJECTION LAMP COMPRISING SINGLE ENDED ARC DISCHARGE LAMP AND AN INTERFERENCE FILTER

Harold L. Rothwell, Rowley; William M. Keeffe, Rockport, and George J. English, Reading, all of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jul. 2, 1980, Ser. No. 165,307
Int. Cl.³ H01J *5/16, 61/40*
U.S. Cl. 313—112 **4 Claims**



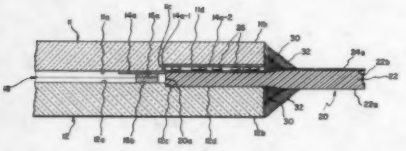
1. The combination of: (1) a projection lamp comprising a single-ended electroded arc discharge tube disposed within a curved reflector, the tube containing, during normal lamp operation, a condensate comprising a molten salt of a metal halide; and (2) an interference filter disposed in front of the reflector, the filter being highly transmissive of visible light and highly reflective of radiation for which the condensate has high absorption in order to increase lamp efficacy.

4,386,293

FLAT DISPLAY CELL AND CABLE WITH ELECTRICAL AND MECHANICAL INTERCONNECTION STRUCTURE

Wesley K. Waldron, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 19, 1980, Ser. No. 161,214
Int. Cl.³ H01J *17/49, 61/30*; H05K *1/18*
U.S. Cl. 313—583 **12 Claims**



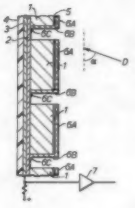
1. In combination, a display cell comprising first and second insulative substrates each having an interior surface facing one another, the interior surface of each of said first and second substrates having a display portion and another portion; at least one conductive lead fabricated upon at least a portion of the interior surface display portion of at least one of said substrates and integrally extending as a conductive lead extension upon the interior surface of said another substrate portion thereof; said another portions of said substrates having a gap therebetween when the interior surfaces of said substrates are placed in registration with each other; a cable comprising an insulative substrate having a pair of opposed surfaces and an end; at least one conductor fabricated upon at least one of the cable substrate surfaces, with each of said cable conductors positioned to be in registration with an associated one of said conductive lead extensions when said cable substrate end is positioned within and substantially fills said gap formed between said another portions of said substrates; and conductive elements deposited upon at least one of the conductive lead extensions and the cable conductors; said conductive elements being positioned only between, and electrically and mechanically connecting, each portion of said cable conductors within said gap and an associated and registered conductive lead extension.

4,386,294

TARGET FOR A PYROELECTRIC CAMERA

Peter D. Nelson, Chelmsford, England, assignor to English Electric Valve Company Limited, Chelmsford, England

Continuation of Ser. No. 67,744, Aug. 20, 1979, abandoned. This application Nov. 6, 1981, Ser. No. 318,942
Claims priority, application United Kingdom, Aug. 22, 1978, 34087/78
Int. Cl.³ H01J *29/45, 31/49*
U.S. Cl. 313—388 **19 Claims**



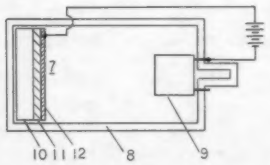
1. A target for a pyroelectric camera comprising an electrode having a front side and a rear side, a number of pyroelectric members behind the electrode and having rear surface parts, electrically conductive material on said rear surface parts of the pyroelectric members and electrically conductive paths from the electrode to the conductive material on the said rear surface parts, each conductive path being on its associated pyroelectric member, an opposite side of each pyroelectric material being substantially free from conductive material.

4,386,295

CERAMIC LUMINESCENT DEVICE

Yosuke Fujita, Ashiya; Fumio Fukushima; Yoji Fukuda, both of Hirakata, and Tsuneharu Nitta, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 16, 1980, Ser. No. 150,655
Claims priority, application Japan, May 16, 1979, 54-60187
Int. Cl.³ H01J *29/10*
U.S. Cl. 313—463 **6 Claims**

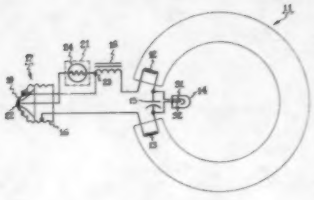


1. A ceramic luminescent device comprising:
a translucent, electrically conductive zinc oxide sintered body;
a luminescent layer of zinc sulfide containing a luminescent impurity formed on said zinc oxide sintered body; and
an electrode layer deposited on said luminescent layer, said electrode layer having the capability of reflecting light.

4,386,296
FLUORESCENT LIGHT UNIT WITH DUAL LIGHT LEVELS

Charles E. Beck, Chesterland, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 19, 1980, Ser. No. 218,042
Int. Cl.³ H05B *41/18, 41/42*
U.S. Cl. 315—53 **11 Claims**

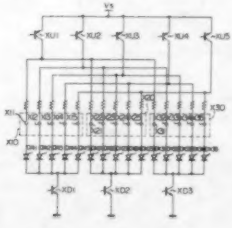


1. A multiple light level gas discharge light unit, such as a fluorescent light unit, for operation from a-c electrical power, comprising a gas discharge light bulb having a pair of cathodes therein, a three-terminal base, means connecting a first end of one of said cathodes to a first terminal of said base, a ballast reactor connected between a first end of the other of said cathodes and a second terminal of said base and adapted to ballast said light bulb at a relatively high light level, and ballast circuit means connected between said second terminal and a third terminal of said base and adapted to ballast said light bulb at a relatively low light level in cooperation with said ballast reactor, said ballast circuit means comprising an impedance circuit connected between said second and third base terminals, and said light unit including a starter switch connected between the remaining ends of said cathodes and adapted to close for a period of time when electrical power is applied to said base, in order to cause preheat current to flow through said filaments, and thereafter be in open condition when said light bulb is operating, said impedance circuit being adapted to have a relatively low impedance during said preheatng of the cathodes for said relatively low light level operation and thereafter having a relatively higher impedance during low light level operation of the lamp.

4,386,297
GAS DISCHARGE PANEL DEVICE

Masanori Itoh, Suzaka, and Minoru Tanaka, Obusemachi, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 5, 1980, Ser. No. 213,409
Claims priority, application Japan, Dec. 11, 1979, 54-159727
Int. Cl.³ H05B *41/00*
U.S. Cl. 315—169.4 **29 Claims**

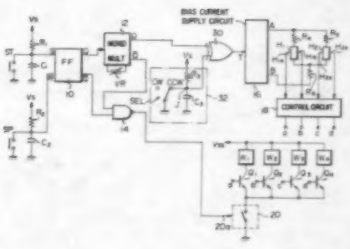


1. A gas discharge panel device, comprising
a plurality of rows of X electrodes and a plurality of columns of Y electrodes, said rows and columns being arranged in a matrix, and
a driving circuit including an X-electrode driver and a Y-electrode driver for controlling the display by selectively applying a discharge sustaining voltage and a write-in voltage to said X and Y electrodes, and
said X electrode driver comprising a first up drive circuit commonly used for selectively applying said discharge sustaining voltage to said X electrodes for both writing and sustaining information in said device, and a first down drive circuit for selectively grounding said X electrodes during a time when said sustain voltage is not being applied to said Y electrodes.

4,386,298
BRUSHLESS DC MOTOR CONTROL CIRCUIT

Manabu Toshimitu, Tsurugashima, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Apr. 7, 1981, Ser. No. 251,824
Claims priority, application Japan, Apr. 14, 1980, 55-50325[U]; Apr. 30, 1980, 55-59147[U]; May 20, 1980, 55-69300[U]
Int. Cl.³ H02K *29/00*
U.S. Cl. 318—254 **10 Claims**



1. A brushless dc motor control circuit for driving and controlling a brushless dc motor including a magnetized rotor, a plurality of drive coils disposed in the vicinity of said magnetized rotor and a plurality of magneto-sensitive elements respectively having electrical characteristics responsive to changes in the magnetic field generated by said magnetized rotor, which comprises:
a bistable circuit having two stable states, said bistable circuit being adapted to assume one of said two stable states when triggered by a start indication signal and to assume the other state when triggered by a stop indication signal;
a pulse generator connected to said bistable circuit, for producing a braking pulse with a predetermined pulse width when said bistable circuit changes the state thereof from said one state to said other state;
a bias current supply circuit for supplying bias currents to said magneto-sensitive elements in a normal direction in the absence of said braking pulse and in a reverse direction in the presence of said braking pulse;
a drive signal generating circuit for producing a drive signal when said bistable circuit takes said one state or when said braking pulse is present; and,
a power supply circuit for energizing said drive coils in a certain sequence in accordance with the change of the electrical characteristics of the respective magneto-sensitive elements, when said drive signal is received, whereby said magnetized rotor rotates.

4,386,299

ELECTRONIC CONTROL CIRCUIT FOR A SEPARATELY EXCITED DC MACHINE

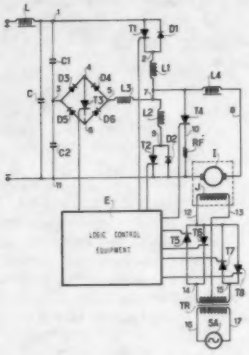
Quang M. Pham, Elancourt, France, assignor to Societe Anonyme dite: Alsthom-Atlantique, Paris, France

Filed Dec. 22, 1980, Ser. No. 218,986

Claims priority, application France, Dec. 20, 1979, 79 31244

Int. Cl.³ H02D *3/14*

U.S. Cl. 318—261 **5 Claims**



1. An electronic control circuit for a separately excited DC machine that includes an armature and a field winding arranged for separate excitation, the electronic control circuit comprising:

positive and negative input terminals for connection to a source of smoothed DC;

first and second armature output terminals for connection to the armature of the DC machine;

a step-up/step-down chopper circuit connected to said input terminals and to said armature output terminals;

a logic control circuit connected to the chopper circuit;

a rheostatic braking circuit connected between the armature output terminals; and

a reverser circuit having first and second field winding output terminals for connection to the field winding of the DC machine, input terminals for connection to a source of electrical power and switching means for connecting DC of a selectable polarity to the field winding output terminals;

the improvement wherein the chopper circuit comprises:

a capacitor bridge connected across the positive and negative input terminals, the capacitor bridge comprising a first capacitor and a second capacitor connected in series to provide a capacitor bridge mid-point terminal;

a traction/braking bridge connected across the positive and negative input terminals, the traction/braking bridge comprising a traction arm and a braking arm connected in series to provide a traction/braking bridge mid-point terminal;

each arm of the traction/braking bridge comprising a respective thyristor connected in series with a respective protective inductor and in parallel with a respective diode, the traction and braking thyristors both being connected so as to conduct electricity selective in the direction from the positive input terminal towards the negative input terminal, and the traction and braking diodes being connected with the opposite direction of conductivity; and

a turn-off circuit connected in series between the mid-point terminals of said bridges, the turn-off circuit comprising a turn-off inductor connected in series with a bi-directional, static, turn-off switch; one of the armature output terminals being connected to same one of the positive and negative input terminals as is connected to the braking arm of the traction/braking bridge, and the other armature output terminal being connected to the mid-point of the traction/braking bridge, with an armature current smoothing inductor being connected in series in the armature circuit; and

the logic control circuit being operatively arranged within the circuit so as to cyclically switch on the thyristor in a selected one of the arms of the traction/braking bridge, and then to switch on the turn-off switch in order to cause said selected thyristor to be turned-off, the on-duty ratio of the traction thyristor determining the tractive effect and the off-duty ratio of the braking thyristor determining the regenerative braking effect.

4,386,300

APPARATUS FOR REPRODUCING DISC RECORD

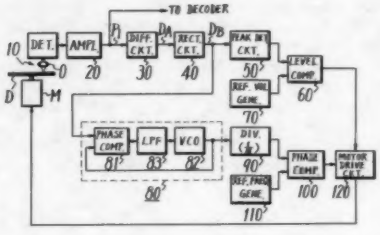
Hiroshi Ogawa, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 6, 1980, Ser. No. 204,552

Claims priority, application Japan, Nov. 15, 1979, 54-148093

Int. Cl.³ H02P *5/06*

U.S. Cl. 318—314 **3 Claims**



1. A servo control system for a disc record reproducing apparatus comprising a motor for driving a disc record so that a PCM signal recordable on the record with constant line velocity, a servo control system for said motor comprising a detector means which is optically coupled to said record disc and detects said recorded PCM signal, a differentiating circuit receiving the output of said detector, a peak detector circuit receiving the output of said differential circuit, a reference amplitude generator, a level comparator receiving inputs from said reference level generator and said peak detector circuit, a first phase comparator receiving the output of said rectifier circuit, a voltage control oscillator receiving the output from said first phase comparator and supplying an input to said first phase comparator, a second phase comparator receiving the output of said voltage control oscillator, a reference frequency generator supplying an input to said second phase comparator and a motor drive circuit receiving inputs from said level comparator and said phase comparator and supplying an input to control the speed of said drive motor for said disc.

4,386,301

DIGITAL SPEED CONTROL SYSTEM FOR SEWING MACHINES

Shigeo Neki, Osaka; Nozomu Shinozaki, and Takashi Dohi, both of Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 23, 1980, Ser. No. 199,704

Claims priority, application Japan, Oct. 26, 1979, 54-139071; Feb. 5, 1980, 55-13156; Feb. 5, 1980, 55-13157

Int. Cl.³ H02P *5/04*

U.S. Cl. 318—318 **16 Claims**

1. A closed-loop speed control system having an accelerator and a decelerator means for controlling the speed of a moving object at a manually established setting speed corresponding to

the position of a manually operated input means under varying loading conditions, comprising:

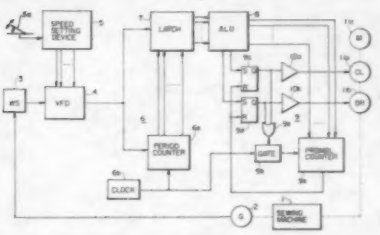
tachometer means for generating pulses at a frequency proportional to the speed of the moving object;

position detecting means for detecting the position of said manually operated means;

a memory responsive to said position detecting means for generating a digital speed control signal;

a variable frequency divider for dividing the frequency of the pulses generated by said tachometer at a variable ratio of input to output frequency in response to said speed control signal;

counter means connected for measuring the interval between successive pulses from the output of said frequency divider;



an arithmetic computing means coupled to said counter means for translating said measured interval according to a predetermined transfer function describing the relationship between said measured interval and a duration in which said moving object is to be subsequently accelerated or decelerated, and for generating a first output signal in accordance with said transfer function when said measured interval is greater than a predetermined value corresponding to said manually established setting speed and a second output signal when said measured interval is smaller than said predetermined value; and

means for respectively converting said first and second output signals into first and second speed control pulses of said duration for selective application respectively to one or the other of said accelerator and decelerator means.

4,386,302

CONTROL DEVICE FOR A MULTISPEED MOTOR

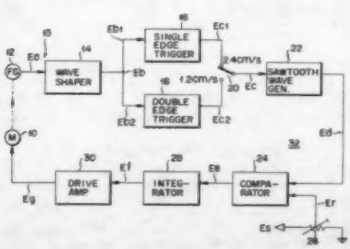
Teruo Iwasawa, Mitaka, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 3, 1980, Ser. No. 203,515

Claims priority, application Japan, Nov. 12, 1979, 54-156832[U]

Int. Cl.³ H02P 7/06

U.S. Cl. 318—318 **12 Claims**



1. A control device for a multispeed motor comprising:

detection signal generating means for providing a detection signal whose period corresponds to a rotation speed of the motor;

first trigger pulse generator means connected to said detection signal generating means, for generating a first trigger pulse whose period corresponds to the period of said detection signal at the time when said motor rotates with a first speed;

a second trigger pulse generator means connected to said detection signal generating means, for generating a second trigger pulse whose period corresponds to half the period of said first trigger pulse at the time when said motor rotates with said first speed, said first and second trigger pulse generator means being coupled in parallel configuration to said detection signal generating means;

selector means connected to said trigger pulse generator means and to said second trigger pulse generator means, for selecting either of said first and second trigger pulses and providing a selected trigger pulse; and

drive signal generating means connected to said selector means and to said motor, for providing a drive signal to said motor in accordance with said selected trigger pulse;

said second trigger pulse generator means including a first EXOR gate having a first input which is coupled to said detection signal generating means so as to be supplied with said detection signal and having a second input connected to ground potential; a second EXOR gate having first and second inputs, said first input of said second EXOR gate being coupled to said detection signal generating means so as to be supplied with said detection signal, and said second EXOR gate further having an output which provides said second trigger pulse; and a first signal delay circuit connected between an output of said first EXOR gate and said second input of said second EXOR gate;

said motor, said detection signal generating means, said first or second trigger pulse generator means, and said drive signal generating means forming a closed negative feedback loop;

whereby when said selector means selects said first trigger pulse said motor rotates with said first speed based on the negative feedback operation of said closed negative feedback loop, and when said selector means selects said second trigger pulse, said motor rotates with a second speed based on the negative feedback operation of said closed negative feedback loop so that the period of said second trigger pulse is substantially equal to the period of said first trigger pulse.

4,386,303

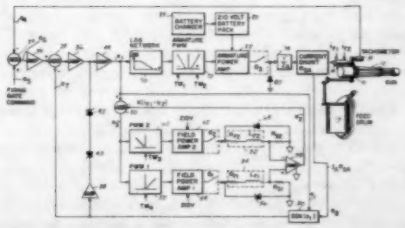
D.C. MOTOR SYSTEM FOR A GATLING GUN

James A. Kleptz, Shelburne, Vt., assignor to General Electric Company, Burlington, Vt.

Filed Dec. 4, 1980, Ser. No. 213,243

Int. Cl.³ H02P 5/06

U.S. Cl. 318—327 **8 Claims**



1. An electric motor system comprising:

an armature winding;

means for providing field flux;

means for controlling current through said armature winding and including:

means for controlling the polarity and the magnitude of said field flux, and

means for supplying current to said armature winding;

said means for controlling the polarity and the magnitude of said field flux including:

means for providing a signal e_1 which is a control function for variable magnitude and polarity of field flux;

means for providing a signal e_2 which is a function of magnitude and polarity of field flux; and

means for minimizing the difference between signal e_1 and said signal e_2.

4,386,304

CONTROL DRIVE FOR A RAM ADJUSTMENT DEVICE ON A BLANKING PRESS

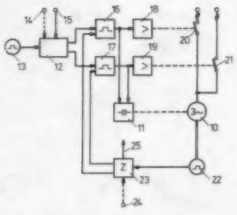
Ewald Bergmann, Rechberghausen; Franz Schneider; Hartmut Hoffmann, both of Göppingen; Burkhard Schumann, Ottenbach, and Günther Grupp, Eislingen, all of Fed. Rep. of Germany, assignors to L. Schuler GmbH, Goeppingen, Fed. Rep. of Germany

Filed Jul. 10, 1978, Ser. No. 923,234

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1977, 2731084

Int. Cl.³ G05B *13/00*

U.S. Cl. 318—561 **3 Claims**



1. A control drive for a ram adjustment device on a high speed blanking press mounted on a press table and having a range of stroke frequencies, wherein a motor drives a control member to adjust a ram of the press relative to a driving rod of the press, and wherein the ram is clampable with respect to the driving rod after the adjustment is performed, the improvement comprising means to adjust the ram by driving the motor during the operation of the press so that a top tool fixed to the ram is held at a substantially constant immersion depth in an opening in a bottom tool fixed to the press table over the entire stroke frequency range of the press, wherein the means to adjust the ram further comprises:

a measuring instrument for detecting the stroke frequency of the blanking press; and

a control circuit coupled to an output of the measuring instrument, said control circuit being programmable with a characteristic which corresponds to the function of immersion depth as a function of stroke frequency, said control circuit providing output control signals corresponding to the stroke frequency for the control drive, and wherein the means to adjust the ram further comprises a flip-flop circuit coupled to the output control signals of the control circuit and to the motor to control the operation of the motor in accordance with the output control signals of the control circuit,

further comprising:

a pulse transmitter for providing signals which are directly proportional to the stroke of the ram adjustment device; and

a counter coupled to an output of the pulse transmitter and to an input of the flip-flop circuit, said counter also having an input which indicates when the press is turned off to activate the counter to cause the flip-flop circuit to operate the motor to return the ram to its initial position after the press is turned off.

4,386,305

DRIVE CONTROL SYSTEM FOR MOTORS

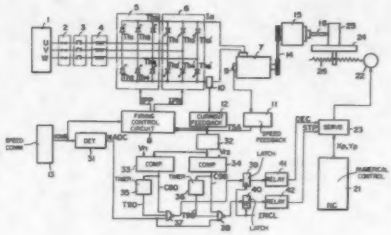
Yoshinori Kohzai, and Yoshiki Fujioka, both of Hino, Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Oct. 27, 1980, Ser. No. 201,314

Claims priority, application Japan, Nov. 12, 1979, 54-146803

Int. Cl.³ G05B *19/25*

U.S. Cl. 318—571 **11 Claims**



1. A system for controlling motor drive in a numerically controlled machine tool having speed command means for generating a speed command signal, a spindle motor, operatively connected to the speed command means, driven to rotate a tool in accordance with the speed command signal, a numerical control device for generating a feed command signal, and a feed shaft motor, operatively connected to the numerical control device, driven to transport a workpiece relative to the tool in accordance with the feed command signal, so that the tool may subject the workpiece to a predetermined machining operation, said system comprising:

first detection means, operatively connected to the spindle motor, for detecting the armature current of the spindle motor;

second detection means, operatively connected to said first detection means, for detecting when the armature current of the spindle motor has continuously exceeded a preset current value for a period of time greater than a predetermined time period;

third detection means for detecting an acceleration or deceleration condition of the spindle motor in dependence upon the speed command signal; and

means, operatively connected to said second and third detection means and the feed shaft motor, for slowing down the feed shaft motor when said second detection means detects that the armature current of the spindle motor has continuously exceeded the preset current value for a period of time greater than the predetermined time period under a condition in which the spindle motor is neither being accelerated nor decelerated, as detected by said third detection means.

4,386,306

NUMERICAL CONTROL DEVICE

Hideo Nishimura, Aichi, and Minoru Enomoto, Ohbu, both of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Nov. 6, 1980, Ser. No. 204,716

Claims priority, application Japan, Nov. 26, 1979, 54-152641

Int. Cl.³ G05B *19/24*

U.S. Cl. 318—571 **13 Claims**

1. An numerical control device for controlling rotation of a servomotor connected through a feed screen shaft to a movable member in response to numerical control data to move said movable member by a commanded feed amount at a commanded feed rate, comprising:

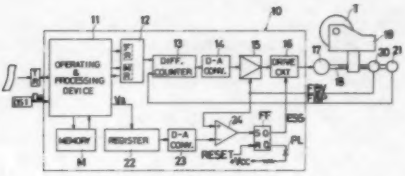
pulse generating means responsive to data indicative of said commanded feed rate for generating a train of pulses at a frequency corresonding to said commanded feed rate;

a velocity detector for detecting an actual feed rate of said movable member so as to output actual feed rate data;

feed control circuit means connected to said servomotor and responsive to said train of said pulses and said actual feed rate data for controlling said servomotor to move said movable member at said commanded feed rate;

a register for storing reference feed rate data;

comparator means for comparing said reference feed rate data from said register with one of said actual feed rate



data output from said velocity detector and data relating to said actual feed rate data so as to output an abnormal signal when a predetermined numerical relationship is established between said actual feed rate data and said reference feed rate data;

connecting means for connecting to said comparator means said one of said actual feed rate data output from said velocity detector and said data relating to said actual feed rate data; and

means for setting new reference feed rate data into said register each time data indicative of a new commanded feed rate is supplied to said pulse generating means.

4,386,307

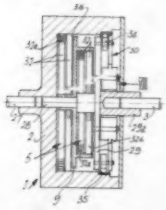
SYNCHRONOUS MOTOR STARTER

Charles W. Webby, 218 Crawford Rd., Gisborne, New Zealand

Filed Dec. 22, 1980, Ser. No. 219,169

Int. Cl.³ H02K *19/36*

U.S. Cl. 318—705 **9 Claims**



1. A synchronous motor starter comprising a synchronising mechanism including a flywheel mounted co-axially with and rotatable independently with respect to the rotor shaft of a synchronous motor and yieldable connection means connecting the flywheel to the rotor shaft wherein the synchronising mechanism is mounted directly on the rotor shaft of the synchronous motor and said flywheel is mounted concentrically with the rotor shaft of the synchronous motor but has no fixed contact with the rotor shaft and the yieldable connection comprises a primary torsion spring or springs having its outer periphery connected to the flywheel and its inner periphery connected to a ring connector which has no fixed contact with the rotor shaft, and a secondary torsion spring or springs having its outer periphery connected to the ring connector and its inner periphery connected to the rotor shaft of the synchronous motor, said torsion spring or springs and their common ring connector being positioned within a flywheel cavity in the flywheel defined by an outer flange of the flywheel and an adjacent inner flange of the flywheel and the arrangement being such that when the motor reaches its operating speed as an induction motor said yieldable connection means is in a stressed state and acts to subsequently accelerate the flywheel relative to the rotor shaft, and then decelerate the flywheel relative to the rotor shaft so that the motor reaches synchronism.

4,386,308

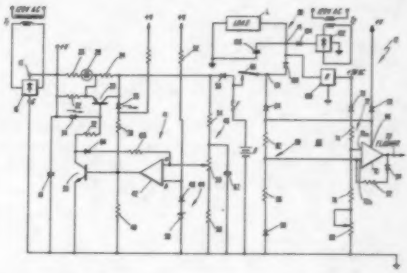
HYSTERESIS TYPE BATTERY CHARGER HAVING OUTPUT SHORT CIRCUIT PROTECTION

Philip Emile, Jr., Roseland, and James K. Kroeger, South Orange, both of N.J., assignors to Sangamo Weston, Inc., Norcross, Ga.

Filed Mar. 31, 1981, Ser. No. 249,411

Int. Cl.³ H02J *7/10*

U.S. Cl. 320—22 **12 Claims**



1. A storage battery charging apparatus comprising:

an input terminal to be connected to a source of electrical energy;

an output terminal to be connected to a storage battery;

first means including a resistance divider circuit for monitoring a voltage applied to said output terminal by said battery;

a first reference voltage source;

comparator means responsive to said first reference voltage source and said battery voltage monitoring means for generating a comparison signal;

pass means connected between said input and output terminals and responsive to said comparison signal for applying a high charging rate current to the storage battery when the battery voltage measured by said monitoring means is below a first predetermined value and for supplying a trickle charging current to said storage battery when the battery voltage measured by said monitoring means is above a second predetermined value;

first and second light emitting diodes (LEDs);

first means responsive to said high charging rate current for energizing said first LED to display a high charging rate mode of operation;

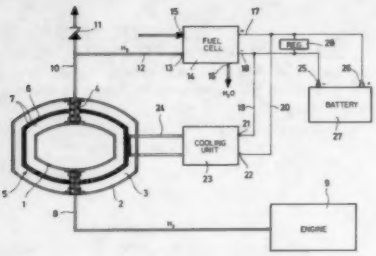
second means responsive to said trickle charging rate current for energizing said second LED to display a trickle charging rate mode of operation;

current foldback control means for limiting the magnitude of charging current applied to said output terminal during excessive charging current demand, e.g., output short circuit, to less than that of said high charging rate current, said current foldback control means including said second LED connected in circuit with said pass means for reducing conductivity of said pass means during said excessive current demand.

4,386,309
STORAGE OF LIQUID HYDROGEN

Walter Peschka, Sindelfingen, Fed. Rep. of Germany, assignor to Deutsche Forschungs- und Versuchsanstalt für Luft- und Raumfahrt e.V., Bonn, Fed. Rep. of Germany

Filed Jun. 8, 1981, Ser. No. 271,265
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1980, 3022802
Int. Cl.³ E17C *3/00*; F01K *15/02*; F17C *13/00*; H02J *7/00*
U.S. Cl. 322—2 R 9 Claims

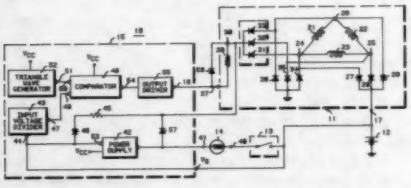


1. A method of increasing the storage time of a liquid hydrogen tank, comprising the steps of feeding hydrogen evaporating in the tank to a hydrogen fuel cell, generating electrical energy by means of the fuel cell, utilizing electrical energy generated by the fuel cell to drive a cooling unit, and cooling the tank by means of the cooling unit.

4,386,310
CONSTANT FREQUENCY AUTOMOTIVE ALTERNATOR BATTERY CHARGING SYSTEM

Kirk A. Sievers, Roselle, Ill., assignor to Motorola Inc., Schaumburg, Ill.

Filed Apr. 4, 1980, Ser. No. 137,334
Int. Cl.³ H02J *7/14*
U.S. Cl. 322—28 6 Claims



1. A regulated automotive alternator battery charging system comprising:

a battery;

alternator means coupled to said battery and driven by a vehicle engine for providing a rectified output charging signal for charging said battery in accordance with an excitation signal received by an alternator field coil; and

voltage regulator means coupled to said alternator means for providing said excitation signal in response to a sensed signal magnitude related to battery voltage, said battery, alternator means and regulator means forming a closed loop feedback system for maintaining said battery in a charged condition;

said voltage regulator means providing for effective field coil excitation at a constant frequency and varying the duty cycle of said constant frequency field coil excitation in accordance with said sensed signal magnitude, said voltage regulator means including means for developing a substantially constant frequency signal, means for varying the duty cycle of this constant frequency signal in accordance with the magnitude of the sensed voltage related to battery voltage, and means for utilizing the variable duty cycle constant frequency signal to provide said alternator field coil excitation signal to control the effective field coil excitation of said alternator, whereby said field coil excitation is accomplished at a constant frequency and the effect of low frequency ripple caused by the low frequency, below said constant frequency, application of field coil excitation in response to engine speed and battery load variations in minimized, while excessive power dissipation occurring because of switching field coil excitation at too high a rate is prevented,

wherein said means for developing said constant frequency signal comprises an oscillator,

wherein said oscillator comprises an analog triangle wave generator which provides an analog triangle wave signal having a substantially constant frequency,

wherein said triange wave signal is received by a comparator that compares the magnitude of this signal to a sensed DC signal related to battery voltage and provides as an output a variable pulse width signal having a constant frequency but a duty cycle related to the sensed battery voltage, and

which includes an ignition switch and a power supply circuit, said power supply circuit coupled to said battery by said ignition switch and also coupled to said triangle wave generator and said comparator, in response to closure of said ignition switch said power supply circuit being electrically connected to said battery and providing a stable regulated voltage to both said triangle wave generator and said comparator for providing operative power thereto, said ignition switch also coupling said battery to said field coil through first diode means for providing initial field coil energization potential,

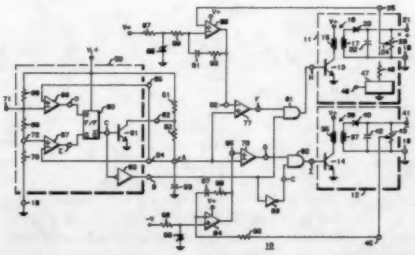
said system including additional auxiliary rectifier means for providing, at an auxiliary output terminal, an output signal for supplying subsequent field coil energization potential and preventing said diode means from supplying such field coil potential, and

second diode means coupled between said auxiliary output terminal and said power supply circuit for supplying operative power thereto in the event of a broken direct connection between the battery and said power supply circuit.

4,386,311
DUAL SLOPE PULSE WIDTH MODULATION REGULATOR AND CONTROL SYSTEM

Michael P. Bafaro, Schaumburg, Ill., assignor to Motorola Inc., Schaumburg, Ill.

Filed Sep. 8, 1981, Ser. No. 300,156
Int. Cl.³ G05F *1/46*
U.S. Cl. 323—271 10 Claims



1. A dual slope pulse width modulation regulator, adaptable for separate control of two independently operative power supplies, comprising:

means for receiving first and second analog error signals each of which being related to the difference between the output of first and second independently operative power supplies and first and second desired predetermined reference levels, respectively;

oscillator means for providing a periodic carrier signal comprising a triangle wave output signal with a period T, said triangle wave signal having a magnitude and said triangle wave signal during each period T having its magnitude varying substantially linearly at a first predetermined rate and then varying substantially linearly at a second predetermined rate of opposite polarity than said first predetermined rate, said oscillator means also providing a corresponding digital output signal having the period T and having a first digital output state existing during said first predetermined rate and a second digital output state existing during said second predetermined rate;

first and second comparator means both being coupled to said oscillator means and each comparator means being coupled to one of said first and second receiving means, respectively, each of said first and second comparator means receiving one of said first and second analog error signals, respectively, along with said triangle wave signal as input signals and providing corresponding first and second digital output comparator signals in response thereto, each of said first and second comparator means providing its respective output comparator signal with one digital output state in response to one of its input signals exceeding the other and a different digital output state in response to the reverse condition; and

first and second AND gate means both being coupled to said oscillator means and each being coupled to one of said first and second comparator means, respectively, each of said first and second AND gate means receiving one of said first and second digital output comparator signals, respectively, and one of said AND gate means effectively directly receiving said digital output signal of said oscillator means while the other of said AND gate means effectively receives a signal corresponding to the inverse of said oscillator means digital output signal, wherein each of said first and second digital comparator output signals comprises a pulse width modulated digital signal having pulse durations related to the magnitude of said first and second error signals, respectively, and wherein each of said AND gate means provides first and second pulse width modulated power supply control signals, respectively, each of said power supply control signals providing periodic controllable width pulses adaptable for excitation of first and second independently operative power supplies, said controllable width pulses of said first and second power supply control signals alternately occurring during each period T and each occurring during said first and second predetermined rates of said triangle wave signal, respectively.

4,386,312

LINEAR CAPACITIVE SENSOR SYSTEM

Dennis K. Briefer, Berlin, Mass., assignor to Setra Systems, Inc., Acton, Mass.

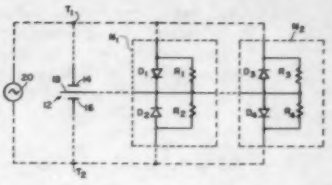
Filed Apr. 24, 1981, Ser. No. 256,994
Int. Cl.³ G01R *11/52, 27/26*
U.S. Cl. 324—60 C **29 Claims**

25. A displacement sensor system, comprising

a capacitive sensor including a pair of fixed elements with spaced parallel electrically conductive surfaces aligned along an axis substantially normal to said surfaces defining therebetween a continuum of parallel equipotential surfaces and a movable element mounted for axial displacement midway between said fixed elements having an electrically conductive surface substantially parallel to the surface of said fixed elements, a first capacitor half being formed by said movable element and one of said fixed elements and a second capacitor half being formed by said movable element and the other one of said fixed elements,

means for applying a nonrectified a.c. signal across said capacitive sensor such that nonrectified a.c. signals appear across both said capacitor halves,

detector means for shifting the baseline of that portion of the a.c. signal developed across one capacitor half in accordance with its amplitude, and for shifting the base line of



and inverting that portion of the a.c. signal developed across the other capacitor half in accordance with its amplitude, and

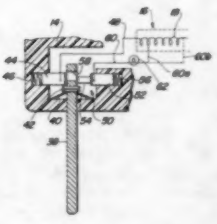
output means coupled to said detector means for combining the opposed baseline shifted a.c. signals to produce a d.c. output signal representing the differential amplitudes of the a.c. signals across said capacitor halves caused by displacement of said movable element.

4,386,313

ELECTRICITY THEFT PREVENTING METER

Norman B. Venaas, and Dale F. Becker, both of Seneca, S.C., assignors to Sangamo Weston, Inc., Norcross, Ga.

Filed Nov. 20, 1980, Ser. No. 208,729
Int. Cl.³ G01R *11/24*
U.S. Cl. 324—110 **6 Claims**



1. An electricity meter engageable with terminals in a meter socket to allow operative connection between a source of electrical power and an electrical power utilizing load, comprising:

measuring means for measuring the amount of electrical power passing therethrough and normally providing an indication proportional thereto;

a bayonet having first and second sides and an opening provided therein intersecting said first and second sides, said bayonet being conductively engageable with one of said terminals connected to said source, said bayonet being biased to a retracted position in said meter and frictionally holdable by said one of said terminals upon disengagement of said meter from said meter socket until said bayonet moves to an entended position;

main contact means including biasing means urging said main contact means into engagement with said first side of said bayonet when said bayonet is in its retracted position, said main contact means being connected to said measuring means to provide a conductive connection for the passage of electrical power between said bayonet and said measuring means; and

detent means operatively associated with said bayonet to

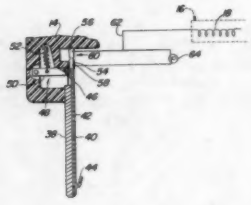
allow the movement of said bayonet from said retracted to said extended position, said detent means including an insulated spacer portion sized to protrude through said opening in said bayonet and biasing means urging said spacer portion into engagement with said second side when said bayonet is in its retracted position, said biasing means of said detent means being stronger than said biasing means of said main contact means to cause said spacer portion to extend through said opening in said bayonet when said bayonet is in its extended position and to urge said main contact means out of engagement with said first side of said bayonet, whereby said detent means acts to lock said bayonet in said extended position, and whereby the conduction of electrical power between said bayonet and said measuring means is altered when said bayonet is moved to said extended position.

4,386,314

ELECTRICITY THEFT PREVENTING METER

Dale F. Becker, Seneca, S.C., assignor to Sangamo Weston, Inc., Norcross, Ga.

Filed Nov. 20, 1980, Ser. No. 208,730
Int. Cl.³ G01R *11/24*
U.S. Cl. 324—110 **16 Claims**



1. An electricity meter engageable with a meter socket to allow operative connection between a source of electrical power and an electrical power utilizing load, comprising:

measuring means for measuring the quantity of electrical power passing therethrough and normally providing an indication proportional thereto;

engagement means conductively engageable with said meter socket and disengageable therefrom;

said engagement means including movable engagement means provided therein conductively engageable in a first position with said meter socket and movable to a second position upon disengagement therefrom;

main connecting means operatively connected between said engagement means and said measuring means operable to allow the conduction of electrical power therebetween, said main connecting means responsive to the disengagement of said movable engagement means from said meter socket to become inoperable to allow the conduction of electrical power between said movable engagement means and said meter socket; and

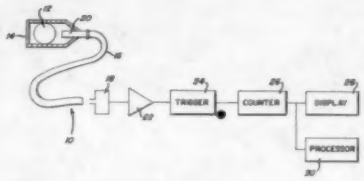
latching means operatively associated with said movable engagement means, said latching means including a pawl associated with said movable engagement means and engageable therewith to normally hold said movable engagement means in said first position and to prevent return of said movable engagement means to said first position when said movable engagement means is moved into said second position, whereby the conduction of electrical power between said movable engagement means and said measuring means is altered when said movable engagement means reengages said socket.

4,386,315

ELECTRIC FIELD DETECTOR

Jeff F. Young, Mississauga, and Daniel Friedmann, North Vancouver, both of Canada, assignors to Friedmann, Youn and Associates Inc., Vancouver, Canada

Filed Apr. 22, 1980, Ser. No. 142,815
Int. Cl.³ G01R *19/26, 29/08*
U.S. Cl. 324—120 **10 Claims**



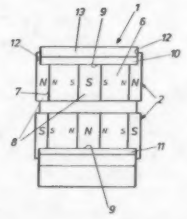
1. A detection device for detecting changes in the magnitude of an electric field to which the device is subjected comprising a sealed bulb of dielectric material, said bulb containing a gaseous medium which generates pulses of electromagnetic radiation when subjected to changes in the magnitude of an electric field, transmitting means associated with said bulb and operable to transmit said pulses to pulse delection means, said pulse detection means producing a discrete output signal for each of said transmitted pulses, and counting means selectively operable to count each of said discrete output signals and thereby provide an indication of the changes in the magnitude of the electric field.

4,386,316

BRAKE MAGNET FOR WATT-HOUR METERS

Max Baermann, Postfach 26, 5060 Bergisch-Gladbach 1, Fed. Rep. of Germany

Filed Oct. 8, 1980, Ser. No. 195,014
Claims priority, application Fed. Rep. of Germany, Oct. 15, 1980, 2941648
Int. Cl.³ G01R *1/16*
U.S. Cl. 324—152 **14 Claims**



1. In a brake manget for watt-hour meters with brake magnet systems of anisotropical, sintered or plastic bonded permanent magnet material of low permeability of nearly one and high coercive field strength, e.g. barium-ferrite, arranged on both sides of the meter braking disc on an essentially U-shaped carrier body of non-magnetic material, spaced by an air gap, each brake magnet system being comprised of two right-angled permanent magnet bodies magnetized in counter direction, parallel to the plane of the meter braking disc, and provided on both pole faces with elements of good magnetic conductivity, producing alternating polarity at their poles, whereby the flux via the said elements of good conductivity close with the opposite pole of counter polarity through the air gap and meter braking disc therein, the improvement which comprises: the systems being provided with temperature compensation elements of a material with temperature related permeability, wherein said temperature compensation elements

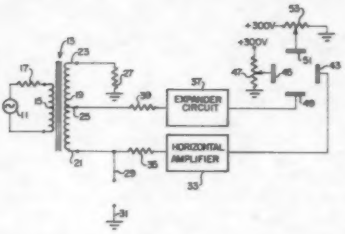
are arranged only on the portions of the magnet system surfaces which are substantially spaced from the air gap.

4,386,317

APPARATUS FOR TESTING, IN-CIRCUIT, SEMICONDUCTORS SHUNTED BY A LOW RESISTANCE

James R. Clinton, Seattle, Wash., assignor to Huntron Instruments, Inc., Lynnwood, Wash.

Filed Sep. 12, 1980, Ser. No. 186,494
Int. Cl.³ G01R *31/22*
U.S. Cl. 324—158 D **14 Claims**



1. An apparatus for testing, in circuit, a semiconductor junction shunted by a low resistance, comprising:

a source of AC voltage;

transformer means comprising a primary winding and a secondary winding, the secondary winding having a lower lead and an upper lead extending therefrom, and a tap lead also extending therefrom at a preselected point between the lower and upper leads;

first resistance means connected between said upper lead and ground;

first and second test lead means suitable for being placed across a junction of the semiconductor to be tested, one test lead means being connected to the lower lead of the secondary winding of said transformer means, the other test lead means being connected to ground;

visual indicator means having vertical and horizontal deflection plates;

first amplifier means connected to the lower lead of the secondary winding of said transformer means so that the signal on the lower lead is sufficiently large to produce a horizontal deflection on said visual indicator means;

means for connecting the output of said first amplifier means to one of the horizontal deflection plates of said visual indicator means;

second amplifier means connected to the tap lead of the secondary winding of said transformer means, said second amplifier means including means for establishing the gain of said second amplifier means so that, for each test event, the peak output of said second amplifier means has a preselected amplitude, regardless of the peak amplitude of the input signal to said second amplifier means, the preselected amplitude being sufficient to provide substantially full vertical deflection on the visual indicator means when applied to the vertical deflection plate thereof; and

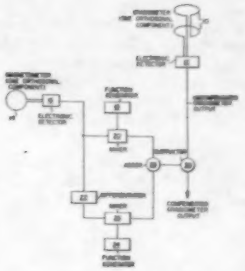
means connecting the output of said second amplifier means to one of the vertical deflection plates of the visual indicator means, the pattern produced on the screen of the visual indicator means during operation of the testing apparatus providing an accurate indication of the operational quality of the semiconductor junction being tested.

4,386,318

METHOD AND APPARATUS TO COMPENSATE A GRADIOMETER HAVING FIRST AND SECOND UNWANTED TERMS

Max B. Burbank, Maple Ridge; Randy K. Lomnes; Jiri Vrba, both of Port Coquitlam, and Alistair A. Fife, Coquitlam, all of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

Filed Sep. 26, 1980, Ser. No. 191,819
Int. Cl.³ G01R *33/02*; G01N *27/72*
U.S. Cl. 324—244 **2 Claims**



1. A device for producing a compensated gradiometer signal from an uncompensated gradiometer signal having first and second unwanted terms respectively due to (1) imperfections in the construction of the gradiometer and fixed objects which induce magnetization, and (2) eddy currents due to metallic objects located in relatively close proximity to the gradiometer, said first term having a first component $\overline{B}$ which is a function of the field magnitude and a second component $\overline{C}$, and said second term having a first component $\overline{B}$ which is a function of the derivative of the field and a second component $\overline{E}$, comprising:

means for sensing the magnetic field and producing a magnitude signal indicating the magnitude thereof;

first function generating means for producing a first function signal representing said second component $\overline{C}$ of said first term;

means for mixing said magnitude signal and first function signal to produce a first term signal indicating said first term;

means for differentiating said magnitude signal to produce a differentiated signal;

second function generating means for producing a second function signal representing said second component $\overline{E}$ of said second term;

means for mixing said differentiated signal and said second function signal to produce a second term signal indicating said second term;

means for adding said first and second term signals to produce a compensating signal; and

means for subtracting said compensating signal from said uncompensated signal to produce said compensated gradiometer signal.

4,386,319

ESR ANALYSIS OF CONDUCTIVE VIDEO DISC COMPONENTS

Vincent D. McGinniss, Delaware, Ohio, assignor to RCA Corporation, New York, N.Y.

Filed Apr. 3, 1981, Ser. No. 250,618
Int. Cl.³ G01R *33/08*
U.S. Cl. 324—300 **4 Claims**

1. In a process of manufacturing a conductive, high density information disc containing both video and audio information

comprising dispersing conductive particles in a plastic material, said plastic material substantially covering each of said particles, and compression molding the resulting conductive composition into said disc, the improvement comprising determining the extent to which said particles are covered by said plastic material by obtaining an electron spin resonance signal for said information disc or said composition and comparing said signal with the intrinsic electron spin resonance signal for said conductive particles.

4,386,320

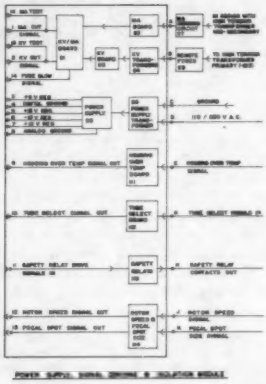
X-RAY SYSTEM SIGNAL DERIVATION CIRCUITS FOR HEAT UNIT INDICATORS AND/OR CALIBRATION METERS

Robert R. Lafrance, St. Malo, Manitoba, Canada

Continuation-in-part of Ser. No. 71,252, Aug. 30, 1979, Pat. No. 4,297,638, which is a continuation-in-part of Ser. No. 914,504, Jun. 12, 1978, abandoned. This application Jul. 27, 1981, Ser. No. 287,202

Int. Cl.³ G01R *31/024*

U.S. Cl. 324—410 **46 Claims**



1. A signal derivation circuit for use with X-ray systems which include an X-ray tube, and at least one high tension transformer having at least one primary winding and at least one secondary winding, with the secondary winding being operatively connected to the X-ray tube, said signal derivation circuit consisting of a KV circuit operatively connected to the primary voltage of the X-ray high tension transformer of the X-ray tube for providing a KV signal that is proportional to but isolated from the KV waveform or signal present across the X-ray tube during operation thereof: said signal derivation circuit comprising in combination a KV circuit having at least one isolation transformer, said isolation transformer having a primary winding and a secondary winding, said primary winding of said isolation transformer being operatively connectable to the primary winding of the high tension transformer of the X-ray system, to monitor and isolate the voltage waveform characteristics of the high tension transformer primary winding, and adjustable means in said KV circuit to match, within limits, the actual operating characteristics of the high tension circuit including the X-ray tube during operation thereby to simulate the KV signal across said X-ray tube during operation, said KV circuit including means operatively connected to the secondary winding of said isolation transformer to match substantially, the type of rectification used in the X-ray system being monitored, means to match substantially, the turns ratio of the high tension transformer of the X-ray system and means to match substantially, the impedance of the high tension circuit of the X-ray system to provide an output signal circuit, a capacitor across said output signal circuit to match substantially, the capacity of said secondary circuit of said high tension transformer, a circuit for providing a simulated KV signal output and a voltage divider circuit in parallel relationship with said capacitor and being operatively connected to said circuit.

4,386,321

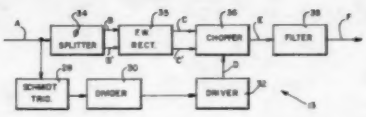
DEVICE FOR ECONOMIZING DATA BANDWIDTH

Donald J. Savage, Danboro, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 2, 1981, Ser. No. 269,182

Int. Cl.³ H03B *15/00*; H03K *21/00*

U.S. Cl. 328—25 **7 Claims**



1. A frequency divider comprising:

first means adapted to receive an alternating electrical signal for providing first and second signals, the first being a replica of the alternating electrical signal and the second being 180° phase shifted from the first:

second means adapted to receive the first and second signals for rectifying the signals;

third means adapted to receive the alternating electrical signal for dividing the frequency thereof by two and providing a switching signal;

fourth means connected to receive the rectified signals and the switching signal for alternately passing one of the rectified signals; and

fifth means connected to receive the alternately passed signals for filtering out high frequencies thereof.

4,386,322

METHOD AND APPARATUS FOR PRODUCING A TRIGGER SIGNAL

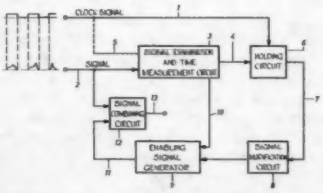
Bruno Richter, Stegaurch bei Bamberg, and Bernhard Brand, Niederwerrn, both of Fed. Rep. of Germany, assignors to Dipl.-Ing. Bruno Richter, Stegaurach bie Bamberg, Fed. Rep. of Germany

Filed Dec. 11, 1980, Ser. No. 215,553

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1979, 2951677

Int. Cl.³ H03K *5/153*

U.S. Cl. 328—63 **9 Claims**



1. A method for producing a trigger signal upon the occurrence of a substantially periodic event which occurs within periodically consecutive time intervals and which has a distinguishing feature relative to other events occurring during said time interval, comprising:

examining features of events occurring during each of said time intervals to determine when said event having said distinguishing feature occurs during a time interval;

producing a signal representing the time at which said event occurs during said time interval;

modifying said signal so that it represents a time earlier than the time at which said event occurs during said time interval;

generating, in a subsequent time interval of said periodically conservative time intervals, a trigger preparation enabling signal at a time in the subsequent time interval which corresponds to said earlier time than the time at which said event occurred in the earlier time interval thereby permitting the production of said trigger signal at the time of occurrence of said event having the specific distinguishing feature during said subsequent time interval.

4,386,323

ARRANGEMENT FOR SYNCHRONIZING THE PHASE OF A LOCAL CLOCK SIGNAL WITH AN INPUT SIGNAL

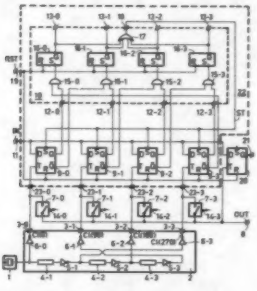
Gerardus L. M. Jansen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 23, 1981, Ser. No. 227,892

Claims priority, application Netherlands, Jan. 31, 1980, 8000606

Int. Cl.³ H03L *7/00*

U.S. Cl. 328—63 **3 Claims**



1. An arrangement for synchronizing the phase of a locally generated clock signal with the phase of an input signal, comprising a clock signal generator and a delay line an input of which is connected to the generator, the delay line having a plurality of taps which are distributed along the delay line, characterized in that the duration of delay in the delay line is equal to a single clock cycle of said clock signal generator and each tap of the delay line is connected to an output of the arrangement by a respective controllable switch, the arrangement further comprising a coincidence detection circuit having inputs and outputs, each input being connected to a respective tap of the delay line and each output being connected to a control input of a respective one of the switches, and the coincidence detection circuit further being connected to an input terminal to which the input signal is to be applied and being operable for generating, when there occurs coincidence of the input signal, following an edge thereof, with an edge of the clock signal version at one of the taps of the delay line, a control signal at one of the outputs of the coincidence circuit for closing the particular switch connecting a selected tap to said output of the arrangement whereby the arrangement is capable of synchronizing the locally generated clock signal with an input signal having a bit rate up to the maximum frequency of the clock signal generator.

4,386,324

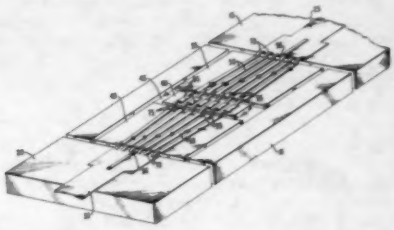
PLANAR CHIP-LEVEL POWER COMBINER

James M. Schellenberg, Huntington Beach, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Dec. 5, 1980, Ser. No. 213,524

Int. Cl.³ H03F *3/60*

U.S. Cl. 330—277 **9 Claims**



1. A chip-level power combiner system, including plural amplifier means for amplifying an electrical signal, a divider means for dividing input power among the plural amplifier means, and a combiner means for combining the outputs of the plural amplifier means, wherein the divider means and the combiner means each comprise:

(a) a first divider/combiner section having plural branch transmission lines cascading from/to a main transmission line;

(b) a second divider/combiner section having plural feeder transmission lines cascading from/to each of the branch transmission lines, wherein each feeder transmission line is tapered and disposed so that the relatively wide end is connected to the amplifier means and the relatively narrow end is connected to the first divider/combiner section;

(c) first resistor means disposed between the branch transmission lines of the first divider/combiner section for electrically isolating each branch transmission line from adjacent branch transmission lines; and

(d) second resistor means disposed between the feeder transmission lines of the second divider/combiner section for electrically isolating each feeder transmission line from adjacent feeder transmission lines.

4,386,325

CIRCUIT ARRANGEMENT FOR REPRODUCING IN AN OUTPUT CIRCUIT A CURRENT FLOWING IN AN INPUT CIRCUIT

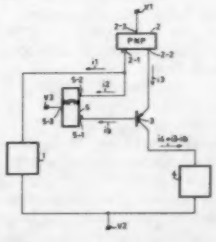
Johannes W. Glasbergen, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 9, 1981, Ser. No. 309,950

Claims priority, application Netherlands, Nov. 12, 1980, 8006164

Int. Cl.³ H03F *3/04*

U.S. Cl. 330—288 **1 Claim**



1. A circuit arrangement for reproducing in an output circuit a current flowing in an input circuit, comprising a current

mirror of a first conductivity type to which the input circuit is connected and comprising an output transistor to which the current mirror is connected, said output transistor being connected to the output circuit, characterized in that the output transistor is of the first conductivity type and has its base connected to the input of a second current mirror of a conductivity type which is the opposite of the first conductivity type, the output of the second current mirror being connected to the input of the first-mentioned current mirror and to the input circuit, the output of the first-mentioned current mirror being connected to the emitter of the output transistor and the collector of the output transistor being connected to the output circuit.

4,386,326

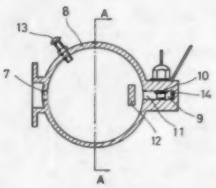
DIELECTRIC-RESONATOR-TUNED MICROWAVE SOLID STATE OSCILLATOR

Yoshikazu Yoshimura, Takatsuki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Continuation of Ser. No. 64,530, Aug. 7, 1979, abandoned. This application Aug. 18, 1981, Ser. No. 294,012

Int. Cl.³ H03B 9/12

U.S. Cl. 331—96 **23 Claims**



18. A dielectric-resonator-tuned microwave solid state oscillator comprising

a cavity resonator having a coupling window for coupling with an external circuit, and having a recess on an inner side wall of said cavity resonator with an opening sufficiently smaller than an internal size of said cavity resonator,

a solid state oscillation device disposed in said recess and oscillating at a frequency, and

a dielectric resonator of a large dielectric constant and a high Q factor,

wherein said cavity resonator is a waveguide having a geometrical dimension which affords a non-cut-off characteristic for said frequency, and

said dielectric resonator is disposed in a non-cut-off region in said cavity resonator in a manner to face to and be adjacent to said opening of said recess.

4,386,327

INTEGRATED CIRCUIT CLAPP OSCILLATOR USING TRANSISTOR CAPACITANCES

Atsushi Ogawa, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 3, 1980, Ser. No. 212,745

Claims priority, application Japan, Dec. 20, 1979, 54/165973; Dec. 20, 1979, 54/165974

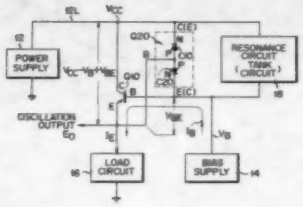
Int. Cl.³ H03B 5/12

U.S. Cl. 331—108 D **35 Claims**

1. An oscillator comprising:

(a) active element means being formed in a semiconductor substrate and having first, second and third electrodes, for providing an oscillation output signal, said second electrode being connected to a resonance circuit adapted for the oscillator and said third electrode of said active element means being coupled to a power supply line and to said resonance circuit;

(b) first junction capacitor, formed in said substrate, being connected between said power supply line of the oscillator and the first electrode of said active element means, the parasitic capacitance between said first junction capacitor and said substrate therefore being connected to said power line; and



(c) second junction capacitor, formed in the same location as said first junction capacitor, and being connected between the first electrode and the second electrode of said active element means.

4,386,328

HIGH FREQUENCY FILTER

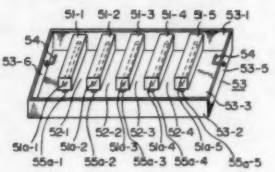
Yoshio Masuda; Atsushi Fukasawa; Takuro Sato; Tatsumasa Yoshida, and Hiromi Ando, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Apr. 14, 1981, Ser. No. 254,071

Claims priority, application Japan, Apr. 28, 1980, 55-55520; Sep. 9, 1980, 55-124021; Dec. 10, 1980, 55-173105

Int. Cl.³ H01P 1/205, 1/208, 7/00

U.S. Cl. 333—202 **17 Claims**



1. A high frequency filter comprising a conductive closed housing, at least two resonators fixed in said housing, an input means for coupling one end resonator of said at least two resonators to an external circuit, an output means for coupling the other end resonator of said at least two resonators to an external circuit, wherein electromagnetic energy is applied to said filter through said input means and exits therefrom through said output means, characterized in that

(a) each resonator comprises an elongated linear inner conductor with a circular cross section one end of which is fixed commonly at the bottom of said housing, and the other end of which is free standing, and an elongated rectangular parallelepiped dielectric body surrounding said inner conductor,

(b) said dielectric body is made of ceramics having two pairs of elongated parallel surface planes, the cross section on the plane perpendicular to said inner conductor is rectangular,

(c) the thickness of said dielectric body surrounding said inner conductor is sufficient to hold all the electromagnetic energy in the dielectric body except for the energy for coupling between two adjacent resonators, and keep an air gap between adjacent resonators,

(d) each resonator is mounted in the housing so that a first pair of parallel surface planes of the dielectric body contact directly with the housing, and said air gap be-

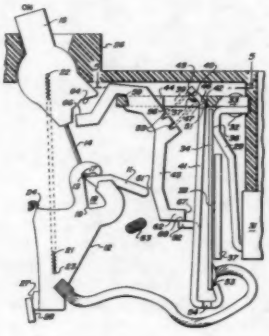
tween resonators is defined by other dielectric body surfaces which are pendicular to said first pair of planes.

4,386,329

STORED ENERGY TRIP UNIT

Alexander R. Norden, New York, N.Y., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Jun. 29, 1981, Ser. No. 278,776
Int. Cl.³ H01H 73/48, 75/12
U.S. Cl. 335—35 8 Claims



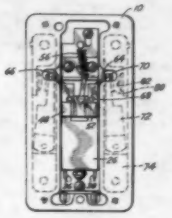
1. In a circuit breaker including
a housing;
a fixed contact held by said housing;
a contact movable within said housing, adapted to engage with and disengage from said fixed contact;
a contact arm coupled to said movable contact;
means coupled to said contact arm for causing said contact arm to trip when said means is actuated; and
apparatus for actuating said means, the improvement wherein said apparatus comprises
an armature latch of soft magnetic material partially rotatable about an axis with respect to said housing,
having a first retaining means, and
having a first coupling surface;
a striker latch member partially rotatable about an axis with respect to said housing,
having a second retaining means,
having a second coupling surface adapted to couple with said first coupling surface, and
having means for recoupling said second coupling surface subsequent to said second coupling surface becoming uncoupled from said first coupling surface;
a spring coupled between said first retaining means and said second retaining means; and
an electrical circuit, including said contacts, responsive to an overload current through said circuit breaker for causing said armature latch to partially rotate, uncoupling said first coupling surface from said second coupling surface, whereupon said spring causes said latch member to rotate, providing an impact momentum for actuating said means coupled to said contact arm, thereby tripping said contact arm, opening said contacts.

4,386,330

HIGH POWER PULSE OPERATED RELAY

Roger E. Watts, and Leon R. Britton, both of Chicago, Ill., assignors to Guardian Electric Manufacturing Company, Chicago, Ill.

Filed Feb. 17, 1981, Ser. No. 234,739
Int. Cl.³ H01H 9/20
U.S. Cl. 335—167 7 Claims



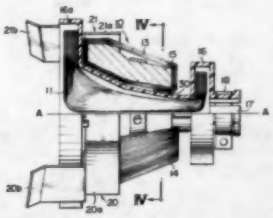
1. An improved solenoid actuated switch assembly comprising, in combination:
a housing having at least two separate recesses separated by an insulating wall;
a solenoid in one recess having a core piece actuator projecting axially and movable in response to current in the solenoid coil in a first axial direction;
biasing means for biasing the coil piece actuator in the opposite axial direction;
a laterally pliable cam follower projecting axially from the end of the corepiece actuator;
a cam affixed to the housing and cooperative with the follower;
a contact blade actuator projecting laterally from the corepiece actuator extending from the one recess into the next adjacent recess; and
a movable contact blade in the other recess connected to the contact blade actuator and movable to make and break a circuit.

4,386,331

DEFLECTION YOKE

Keiji Kohzuki, Yokohama, and Tsuneo Yoshida, Tokyo, both of Japan, assignors to Denki Onkyo Co., Ltd., Tokyo, Japan

Filed Jun. 4, 1981, Ser. No. 270,544
Claims priority, application Japan, Jun. 6, 1980, 55-76400
Int. Cl.³ H01F 3/12
U.S. Cl. 335—211 8 Claims



1. A deflection yoke for use in a color cathode-ray tube provided on its neck with a plurality of electron guns for emitting three electron beams in an in-line arrangement onto a screen, which comprises
(a) an annular core,
(b) a set of horizontal deflection coils, wound in the form of a saddle, for generating a pincushion horizontal deflection magnetic field at the screen side of the tube,

(c) a set of vertical deflection coils located outside said horizontal deflection coils and toroidally wound around said core for generating a barrel distributed magnetic field at the gun side of the tube,

(d) a coil separator positioned between said horizontal deflection coils and said vertical deflection coils to electrically separate said deflection coils,

(e) pincushion deflection means for generating a pincushion type vertical deflection magnetic field at the screen side of said deflection yoke, and

(f) a set of correction means, of a mild magnetic material, located between said horizontal deflection coils and said vertical deflection coils at north-south (vertical) positions of an electron gun side of said deflection yoke, each correction means including circular lugs which extend in a circumferential direction of said neck of the cathode-ray tube to correct horizontal misconvergence at corners of the tube screen and a center lug integral with said circular lugs, which extends in the direction of the tube axis of said cathode-ray tube and has a smaller length in the circumferential direction of said neck than said circular lugs to correct vertical misconvergence at the corners of the tube screen.

4,386,332

MAGNETIC CIRCUIT FOR DYNAMIC SPEAKER

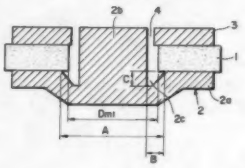
Tatsuo Saito, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokorozawa, Japan

Filed Jul. 31, 1981, Ser. No. 288,875

Claims priority, application Japan, Aug. 1, 1980, 55-108285[U]

Int. Cl.³ H01H *7/08*; H04R *9/02*

U.S. Cl. 335—231 **2 Claims**



1. A magnetic circuit for a dynamic speaker comprising:

an annularly-shaped magnet;

a one piece pole yoke having a back plate coupled to a first surface of said magnet and a center pole extending from a central portion of said back plate passing through a hole in said annularly-shaped magnet; and

an annular top plate coupled to a second surface of said magnet, an air gap being provided between said top plate and said center pole and a tapered groove being formed in said back plate circumferentially of the base of said center pole tapering outwardly toward said magnet, said groove extending beyond a region defined by an inner diameter of said magnet with the outer diameter of the groove being approximately 1.25 times the inner diameter of said magnet and the width of said groove being equal to or larger than the depth of said groove.

4,386,333

UNIVERSAL ELECTRICAL CONNECTION APPARATUS

George O. Dillan, Boulder County, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 2, 1981, Ser. No. 317,108

Int. Cl.³ H01F *27/04*

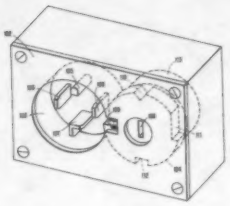
U.S. Cl. 336—107 **6 Claims**

5. Apparatus for connecting an electrical device to any one of a plurality of supply voltages, including:

a voltage switch, having a manual control, a voltage output connected to the device, and a voltage input, the switch being operable by the manual control to vary the input to output voltage ratio;

a plurality of line-cord sets each having a plug at one end with pins mateable with a predefined voltage supply and a connector at the other end having a unique shape identifying the plug;

a voltage receptacle connected to the switch input for receiving one line-cord connector at a time; and



indentations, formed on the circumference of a disc attached to the switch's manual control, the disc being rotatable to bring one indentation at a time into a position to mate with a connector shape receivable by the receptacle and to bar other connector shapes;

whereby, rotation of the disc permits the receptacle to receive one mating connector, and varies the input to output voltage to provide substantially one output voltage for different voltage supplies.

4,386,334

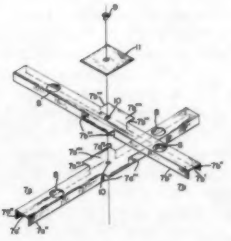
SUPPORT ARRANGEMENT FOR A HELICALLY WOUND FUSIBLE ELEMENT

Frederick J. Kozacka, South Hampton, and Richard A. Belcher, Hampton Falls, both of N.H., assignors to Gould Inc., Electric Fuse Div., Newburyport, Mass.

Filed Feb. 8, 1982, Ser. No. 346,838

Int. Cl.³ H01H *85/16*

U.S. Cl. 337—251 **8 Claims**



1. An electric fuse for elevated circuit voltages including:

a. a tubular housing of an electric insulating material;

b. a pair of electroconductive terminal elements closing said housing at the ends thereof;

c. a pulverulent arc-quenching filler inside said housing;

d. a substantially helical fusible element inside said housing, submerged in said arc-quenching filler and conductively interconnecting said pair of terminal elements;

e. a plurality of rods of electric insulating material extending in a direction longitudinally of said housing and supporting said fusible element;

f. a pair of rod supports arranged at the ends of said housing for supporting the ends of said plurality of rods, wherein;

g. each of said pair of rod supports includes a pair of angularly arranged sheet-metal channels, each comprising a web and each comprising a pair of flanges, said web of

each of said pair of sheet-metal channels being arranged in close proximity to one of said pair of terminal elements and said pair of flanges of each of said pair of sheet-metal channels projecting toward the longitudinal center of said housing;

h. said pair of sheet-metal channels having ends in close proximity to said housing to limit possible movement of said pair of sheet-metal channels relative to said housing;

i. juxtapposed portions of both of said pair of flanges of at least one of said pair of sheet-metal channels being cut-off from the rest of said pair of flanges, and bent from their normal positions into the plane of the web to which said portions are attached so that a passageway is formed extending transversely across at least said one of said pair of sheet-metal channels;

j. the other of said pair of sheet-metal channels being inserted into said passageway so that said web of said other of said pair of sheet-metal channels is parallel and in close proximity to the web of said one of said pair of sheet-metal channels; and

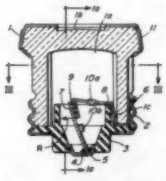
k. means for mechanically connecting said web of said one and said web of said other of said pair of sheet-metal channels.

4,386,335

ELECTRIC PLUG TYPE FUSE

Terry R. O'Brien, Mississauga, and Kurt W. Lechner, Toronto, both of Canada, assignors to Gould Inc., Electric Fuse Div., Newburyport, Mass.

Filed Jan. 28, 1982, Ser. No. 343,617
Claims priority, application Canada, Mar. 4, 1981, 372297
Int. Cl.³ H01H *85/16*
U.S. Cl. 337—261 **8 Claims**



1. An electric plug type fuse including a substantially cylindrical hollow glass body defining a cavity and being screw threaded on the outer surface thereof, a contact button support of an electric insulating material of which one end projects into said cavity and the other end projects in the opposite direction away from said cavity to the outside thereof, a contact button on the outer end of said contact-button-support, a metal shell overlapping said contact-button-support, said metal shell being screw threaded, and the screw threads thereof mating with the screw threads on said glass body, wherein the novel features include:

a. a strip-like spring having one end thereof conductively connected to said contact button and the other end of said spring extending into said cavity defined by said glass body;

b. a fusible element capable of interrupting short-circuit-like currents, one end of said fusible element being conductively connected to said metal shell; and,

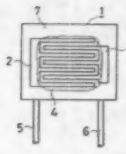
c. a solder joint conductively joining the other end of said fusible element to the other end of said strip-like spring said solder joint holding said strip-like spring in a deflected position where said spring serves to place said solder joint in tension, whereby; upon fusing of said fusible element or melting of said solder joint said spring resiliency will cause it to move away from said fusible element to a nonconducting position.

4,386,336

HUMIDITY SENSOR AND A HUMIDITY DETECTION CIRCUIT USING THE HUMIDITY SENSOR

Shinichi Kinomoto, Kyoto; Masato Kawamura, Nishimachi, and Susumu Kobayashi, Kanagawa, all of Japan, assignors to Shinyei Kaisha, Hyogo, Japan

Division of Ser. No. 50,220, Jun. 20, 1979, Pat. No. 4,330,718. This application Aug. 22, 1980, Ser. No. 181,396
Claims priority, application Japan, Aug. 24, 1978, 53-103474
Int. Cl.³ H01L *7/00*; B32B *15/08*; G01N *25/64*
U.S. Cl. 338—35 **11 Claims**



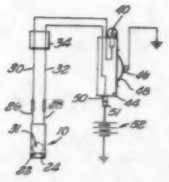
1. A humidity sensor comprising a base plate, a film on said base plate, and a pair of electrodes connected with said film, said film being a high molecular polymer having chloride ions in the polymer chain obtained by polymerizing a chloride ion-containing reactive cationic monomer alone or copolymerizing said cationic monomer with another monomeric component.

4,386,337

LIQUID LEVEL SENSOR

John M. Todd, 18307 Burbank Blvd., #202, Tarzana, Calif. 91356

Filed Jun. 3, 1980, Ser. No. 156,159
Int. Cl.³ G08B *23/00*
U.S. Cl. 340—59 **14 Claims**



1. A liquid level sensor for detecting the existence of or excess of a predetermined level of a liquid in a reservoir, having one access opening to the reservoir through a dipstick tube, comprising:

an encapsulator having an inner sleeve and an outer sleeve surrounding the inner sleeve and electrically insulated from the inner sleeve, and being of a size sufficiently small to be inserted into and pass through the dipstick tube;

at least one inner sleeve contact tang protruding radially inward from the inner sleeve;

at least one outer sleeve contact tang protruding radially inward from the outer sleeve without making electrical contact with the inner sleeve;

an electrically conductive float contained within the space defined by the interior of the inner sleeve and freely movable within the interior of the inner sleeve;

a first wire lead electrically connected to one of the inner sleeve and the outer sleeve; and,

a second wire lead electrically connected to the other of the inner and the outer sleeve; the first and second wire leads passing through the dipstick tube and electrically connecting, respectively, to an electrically-grounded point and to an indicator lamp which lamp is electrically connected to a source of electrical power.

4,386,338

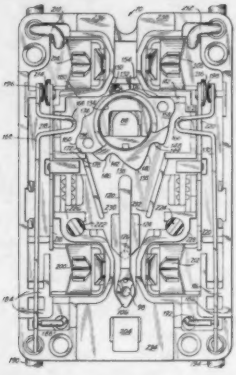
REMOTE CONTROL SYSTEM

Richard C. Doyle, Greenlawn, and Lester Rivera, Brooklyn, both of N.Y., assignors to Leviton Manufacturing Company, Inc., Little Neck, N.Y.

Filed Nov. 17, 1980, Ser. No. 207,534

Int. Cl.³ H04Q *5/04*

U.S. Cl. 340—310 A **4 Claims**



1. Switching apparatus for selectively completing or interrupting an electrical connection between input and output conductors, or the like, comprising, in combination: a housing; a magnetizable armature disposed within a portion of said housing and being movable between first and second positions; electromagnet coil means disposed within said housing for moving said armature when energized from the first position to the second position; an input contact electrically connected to said input conductor; an output contact electrically connected to said output conductor; strap means for mounting the switching apparatus upon a selected surface, said strap means including portions thereof which define a path of the magnetic field generated by said coil means to influence the position of said armature, and movable cam means responsive to movement of said armature for influencing a separation of said input and output contacts, thereby interrupting electrical connection between them.

4,386,339

DIRECT FLASH ANALOG-TO-DIGITAL CONVERTER AND METHOD

Tim W. Henry, Colorado Springs, Colo., and Mark P. Morgenthaler, Palo Alto, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 135,751, Mar. 31, 1980, abandoned. This application Apr. 5, 1982, Ser. No. 366,038

Int. Cl.³ H03K *13/02*

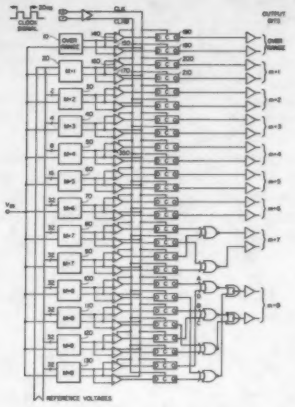
U.S. Cl. 340—347 AD **10 Claims**

1. An analog-to-digital Gray code encoder for providing a digital signal in response to an analog signal having a particular slew rate, the encoder comprising:

a plurality of comparators each having M number of differential means, each having a differential output port, for providing, in response to said analog signal, an encoder voltage output, said M being an integer, and each of said differential means being alternately direct-coupled and cross-coupled at its differential output port to form a common differential output port in parallel;

a current source coupled to one side of said common differential output port to provide a dummy differential amplifier in those comparators where M is an even integer; and not in those comparators where M is an odd integer

amplifying means for providing, in response to said encoder voltage, an encoded bit for a converter output of parallel bits



having a loss of bit accuracy that progresses from least to most significant bit as the slew rate is increased.

4,386,340

MELODY GENERATION IN AN ELECTRONIC CASH REGISTER

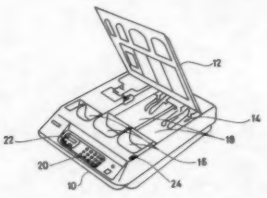
Masaharu Satoh, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 20, 1980, Ser. No. 198,648

Claims priority, application Japan, Oct. 23, 1979, 54-148496[U]; Mar. 24, 1980, 55-38006; Mar. 25, 1980, 55-38751

Int. Cl.³ G08B *21/00*

U.S. Cl. 340—384 E **2 Claims**



1. A melody generation control system in an electronic cash register including a cash box for storing money therein, comprising:

state determination means for generating a first control signal when said cash box is open, and a second control signal when said cash box is closed,

melody storage means for storing a plurality of melodies therein;

teller identification means for identifying which of a plurality of tellers is using said machine, said teller identification means producing a teller identifying signal corresponding to the particular teller using said machine;

selection means responsive to said teller identification signal for selecting a different desired melody from said plurality of melodies for each teller;

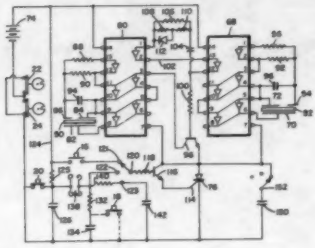
control means for recalling said melody information stored in said melody storage means when said first control signal is generated by said state determination means; and

audio means for generating an audio melody sound from the melody information recalled from said melody storage means.

4,386,341
SECURITY APPARATUS WITH AUDIBLE ALARM OF ENHANCED URGENCY

Yujiro Yamamoto, 1201 Via La Jolla, San Clemente, Calif. 92672

Filed Jun. 4, 1981, Ser. No. 270,262
Int. Cl.³ G08B 3/00
U.S. Cl. 340—384 E 6 Claims

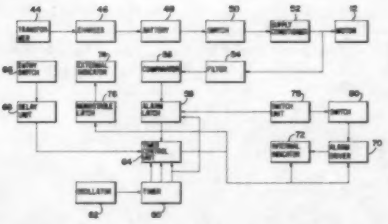


1. In a security system:
sound generating means for generating two audible tones and interrupting means for interrupting one of said tones at a sub-audible rate.

4,386,342
INTRUSION ALARM SYSTEM

Alexander T. McKinley, 3 Amanda Rd., Camps Bay, Cape Town, Cape Province, South Africa

Filed Mar. 31, 1981, Ser. No. 249,745
Claims priority, application South Africa, Apr. 1, 1980, 80/1928
Int. Cl.³ G08B 13/20, 13/08
U.S. Cl. 340—544 5 Claims

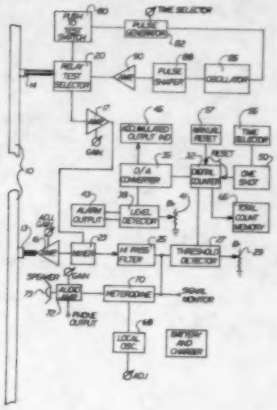


1. An alarm system for indicating that entry has been made into closed premises, the alarm system comprising a blower, an electric motor for driving the blower, means for monitoring the current being drawn by the motor and for producing an output signal which varies with changes in motor current, means connected to the monitoring means for detecting a change in said output signal and hence for detecting the change in motor current which occurs upon there being a change in the load on the motor, an alarm activated by the detecting means, means operable by the user to arm the system, means for activating the alarm in response to a change in the condition of the arming means to the disarmed condition, timing means for delaying activation of the alarm for a predetermined period after such change in the condition of the arming means to the disarmed condition, and manually operable means for operation during the delay period for preventing the alarm being activated.

4,386,343
ACOUSTIC EMISSION INTRUDER ALARM SYSTEM

James T. Shiveley, 10965 Tanager Trail, Brecksville, Ohio 44141

Continuation of Ser. No. 962,702, Nov. 20, 1978, abandoned. This application Sep. 4, 1980, Ser. No. 184,118
Int. Cl.³ G08B 13/00
U.S. Cl. 340—566 9 Claims



1. An acoustic emission intruder detection system for detecting physical attacks made on a protected structure which exhibits the characteristic of transmitting acoustic emission stress wave signals therethrough from the area of the attack, comprising:
acoustic sensor means adapted to be mounted on said protected structure so as to receive stress wave signals propagated through said structure from an attack area, said sensor means being responsive to received stress wave signals for providing an event signal of a corresponding frequency and having an amplitude and duration dependent upon that of said stress wave signals,
high pass filtering means for passing event signals exhibiting a frequency greater than about 50,000 Hz, and
output means for providing an event alarm dependent upon the value of said filtered event signal,
wherein said acoustic sensor means comprises a plurality of piezoelectrical transducers and further comprising a circuit means for providing electrical signals to one of said transducers to simulate a physical attack upon said protected structure.

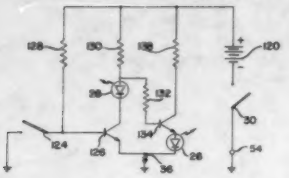
4,386,344
ELECTRONIC EDGE AND CENTER LOCATOR AND METHOD OF USING SAME

Charles L. Vecchiatto, 22601 Dunkenfield Cir., El Toro, Calif. 92630

Filed Apr. 16, 1981, Ser. No. 254,922
Int. Cl.³ G08B 21/00
U.S. Cl. 340—680 15 Claims

1. An electronic contact detector for use in aligning a workpiece in a machine tool having a tool holder, said contact detector comprising:
a probe having an electrically conductive tip for contacting said workpiece, and having an electrically insulative shank for mounting in said tool holder; and
an electronic contact detection circuit for connecting to said

probe and to said machine tool for detecting the electrical continuity between said electrically conductive tip and



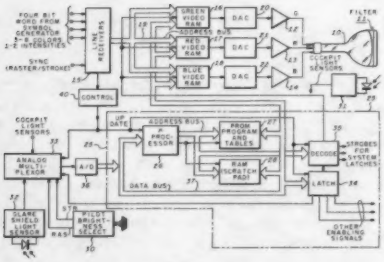
said workpiece resulting when said probe contacts said workpiece.

4,386,345

COLOR AND BRIGHTNESS TRACKING IN A CATHODE RAY TUBE DISPLAY SYSTEM

Parm L. Narveson; Robert W. Clark, and Lawrence C. Hannert, all of Phoenix, Ariz., assignors to Sperry Corporation, New York, N.Y.

Filed Sep. 22, 1981, Ser. No. 304,451
Int. Cl.³ G09G *1/00, 1/28*
U.S. Cl. 340—703 **12 Claims**



1. Color and brightness tracking control apparatus for a color cathode ray tube display instrument system subjected to viewing under a wide range of ambient light conditions comprising

(a) a cathode ray tube having a display screen for emitting images in a plurality of different colors dependent upon the independent and variable energization of cathode means for producing at least two independent primary colors the relative brightnesses of which determine said plurality of colors,

(b) video command means for commanding at least one image to be displayed in at least one predetermined color comprised of components of said two primary colors at the required relative brightness levels,

(c) ambient light sensor means for providing a signal corresponding to the range between the extremes of ambient light conditions existing in the vicinity of said display instrument,

(d) computer means including

(i) memory means containing data representing the independent cathode energizations required to produce each of said primary color component relative brightnesses over said range of ambient light conditions, and

(ii) processor means responsive at least in part to said light sensor means for continuously computing a reference display brightness and for deriving from said memory means cathode energization data required to produce said two primary color component relative brightnesses at the existing ambient light conditions, and

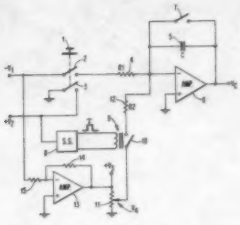
(e) means responsive to said video command means and said derived cathode energization data for energizing said cathode means to thereby produce said predetermined color image at the existing ambient light conditions.

4,386,346

CURSOR CONTROLLER

James L. Levine, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 27, 1981, Ser. No. 248,667
Int. Cl.³ G09G *1/00*
U.S. Cl. 340—709 **6 Claims**



1. In a manually controllable device of the type wherein the position of an element proceeds at a rate in response to a first operator signal and the operation is terminated in response to a subsequent second operator signal, the improvement for providing an operator reaction compensated end point comprising:

means for establishing a signal responsive to said rate;

means for establishing a signal indicative of operator reaction time;

means for producing an end point compensation adjustment signal based on the product of said operator reaction time signal and said rate signal; and

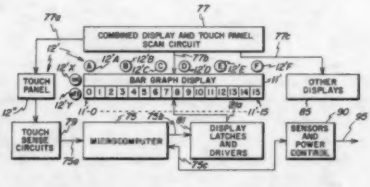
means for establishing an end point position by applying said end point compensation adjustment signal negatively to the end point at the time of said second operator signal.

4,386,347

METHOD OF, AND APPARATUS FOR, INCREASED RESOLUTION SLEWING OF A BAR-GRAPH-DISPLAY DATA INPUT/OUTPUT SYSTEM

Scott E. Cutler, and Charles W. Eichelberger, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 4, 1980, Ser. No. 212,963
Int. Cl.³ G09G *3/14*
U.S. Cl. 340—712 **14 Claims**



1. Data input/output apparatus, comprising:

a plurality M, where M is an integer greater than 1, of individually and singly actuateable data input means for providing only one of a like plurality M of data input signals at any time;

a bar graph display having a plurality $N=(Z*(M-1)+1)$, where Z is an integer greater than 2, of individually-actuateable display bar segments, each segment corresponding to a different one of a like plurality N of apparatus data output levels;

data output means at which is provided one of a plurality N of different data output signals, each associated with the highest presently-actuated bar segment of said display; and

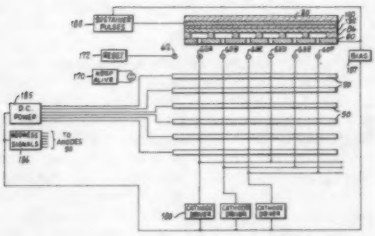
means for selecting a chosen one of the plurality N of data output signals and immediately enabling, upon actuation of a chosen input means directly associated with a bar segment greater than a presently-actuated bar segment, a data output signal and an associated bar display of up to and including that bar segment at a level immediately above the bar segment directly associated with that input means next lower than the chosen actuated input means, and then, if said chosen input means remains actuated, sequentially enabling successively higher levels and associated additional bar segments, up to and including the bar segment and level associated with the chosen actuated input means, after each of a like number of time intervals; said enabling means also for immediately enabling, upon actuation of a chosen input means associated with a bar segment less than a presently-actuated bar segment, a data output and an associated bar display of up to and including that bar segment at a level immediately below the bar segment directly associated with that input means next higher than the chosen actuated input means, and then, if said chosen input means remains actuated, sequentially disabling successively lower levels and associated additional bar segments, down to but not including the bar segment and associated level associated with the chosen actuated input means, after each of a like number of time intervals.

4,386,348

DISPLAY PANEL HAVING MEMORY

George E. Holz, North Plainfield, and James A. Ogle, Neshanic Station, both of N.J., assignors to Burroughs Corporation, Detroit, Mich.

Filed Jun. 22, 1979, Ser. No. 51,313
Int. Cl.³ G09G 3/28
U.S. Cl. 340—714 38 Claims



1. A display device comprising

a first gas cell and an anode electrode and a cathode electrode associated with said first gas cell, said electrodes being operable to have current flow between them for ionizing the gas in said cell and for turning on said first gas cell and providing cathode glow discharge, the cathode glow discharge representing a primary discharge and generating charged particles including electrons which are retained in said first gas cell,

a second gas cell for displaying visible glow, said second gas cell being adjacent to said first gas cell with a gas communication path between them,

first electrode means for applying sustaining signals to said second gas cell for sustaining visible glow therein once glow has been established,

second electrode means between said first gas cell and said second gas cell for attracting charged particles in said primary discharge when such charged particles are not retained in said first cell, whereby said charged particles are drawn into said second cell by said sustaining signals to cause visible glow discharge in said second cell, said visible glow discharge being sustained by said sustaining signals, and

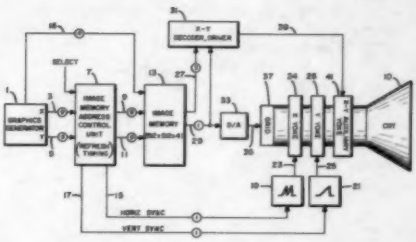
means coupled to the electrodes of said first gas cell for turning off said first gas cell and interrupting the current flow between said anode and cathode whereby said charged particles are no longer retained in said first cell and current flows between said cathode and said first and second electrode means and into said second cell which is thereby caused to provide visible glow.

4,386,349

HIGH RESOLUTION GRAPHICS SMOOTHING

Mauritz L. Granberg, Minneapolis; David G. Hanson, Spring Lake Park; Robert L. Rajala, Minneapolis, and William G. Whipple, Eagan, all of Minn., assignors to Sperry Corporation, New York, N.Y.

Filed Apr. 28, 1981, Ser. No. 258,252
Int. Cl.³ G06F 3/14
U.S. Cl. 340—723 8 Claims



1. A graphics display system, comprising:

a CRT having its screen segmented into a plurality of pixels;

graphics generator means for generating the x and y coordinates of a reference point within each of the plurality of pixels that comprise a graphics figure, and for generating a position correction code containing information in the axis, sign, and magnitude of positional correction for each of the generated graphics pixels;

first means for deflecting an electron beam of said CRT to the reference points of the graphics pixels; and

second means respectively coupled to said position correction codes and said first means for incrementally deflecting said electron beam to a selected point relative to said reference point within each of the graphics pixels comprising:

memory means for storing in an equal first plurality of addressable locations, as are one-to-one respectively associated with said plurality of generated pixels that comprise a graphics figure, a first part of (said axis, said sign, and said magnitude information) of each said position correction code for each said generated graphics pixel, and for storing in an equal second plurality of addressable locations immediately addressably preceeding, and in one-to-one association with, said first plurality of addressable locations the remaining, second part of (said axis, said sign, and said magnitude information) of said position correction code for each generated graphics pixel;

logic means for successively addressing each said first plurality of addressable memory locations in order to obtain said first part information stored therein, and for addressing each associated one of said second plurality of addressable memory locations in order to obtain said second part information stored therein, and for reconstituting from both said first part information and said second part information each said position correction codes for each of said generated graphics pixels;

deflection means responsive to said reconstituted position correction codes for incrementally deflecting said electron beam to said selected point relative to said reference point within each of said generated graphics pixels;

thereby improving the resolution of the figures that are displayed on the screen of said CRT;

thereby storing said axis, said sign, and said magnitude information of each said position correction codes for each said generated graphics pixels in two, a first and a second, successive memory locations, whereby thusly each said first and said second memory locations need not contain so many bits as would be required if the entirety of (said axis, said sign, and said magnitude information) of each said position correction code were stored in one such, such first or such second, memory location.

4,386,350

DISPLAY APPARATUS

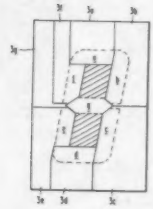
Fumihiro Ogawa, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jun. 25, 1980, Ser. No. 163,233

Claims priority, application Japan, Dec. 25, 1979, 54-80401; Dec. 25, 1979, 54-168682

Int. Cl.³ G09G 3/18

U.S. Cl. 340—765 **7 Claims**



1. A display panel adapted to display information by the distinctive optical appearance of selected display segments against a background, comprising:

a first substrate having a plurality of first electrodes disposed thereon, said first electrodes covering substantially the entire area of said first substrate except for first lines of narrow spaces which serve to electrically insulate said first electrodes from each other and which have dimensions small compared to dimensions of said segments, the number of said first electrodes being identical to the total number of said segments;

a second substrate opposed to said first substrate having a pair of second electrodes disposed thereon, said second electrodes covering substantially the entire area of said second substrate except for a second line of narrow space which serves to electrically insulate said second electrodes from each other and which has a width small compared to dimensions of said segments;

each of said first electrodes including a first lead area and a first segment area, each of said second electrodes including a second lead area and at least one second segment area, a part of a circumference of said first segment area coinciding with a part of said first lines and the remaining parts of said circumference of said first segment area coinciding with a part of said second line, the remaining part of said second line coinciding with the remaining part of said first lines, one of said second electrodes coinciding with both of at least one of said first lead areas of at least one predetermined first electrode and each said first segment area of the remaining of said first electrodes, and the other of said second electrodes coinciding with both of each said first lead areas of the remaining of said first electrodes and each said segment area of said at least one predetermined electrode; and

a display medium interposed between said first substrate and said second substrate.

4,386,351

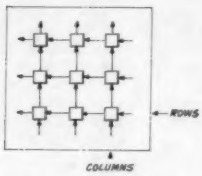
METHOD AND SYSTEM FOR TWO-DIMENSIONAL TRAVELING DISPLAY AND DRIVER CIRCUITS THEREFOR

John R. Lowdenslager, Wilton, Conn., assignor to Timex Corporation, Waterbury, Conn.

Filed Dec. 20, 1980, Ser. No. 218,851

Int. Cl.³ G09G 3/28

U.S. Cl. 340—768 **19 Claims**



1. A two-dimensional traveling display for displaying data that may be continuously or intermittently changing in the manner of a traveling sign with the traveling display moving either left, right, up or down depending upon a desired format; said traveling display comprising an electrically actuated two-dimensional dot matrix display panel formed by a plurality of rows and columns of dot-like areas whose light modifying characteristics are changed by application of electrical energization potentials thereto and having respective sets of row and column electrodes for selective application of energization potentials to selected ones of the dot-like areas to form a desired image, display matrix driver circuit means for selectively applying electrical energization potentials to the row and column electrodes of said two-dimensional dot matrix display panel in accordance with the image to be displayed, said display matrix driver circuit means including two-dimensional shift register means for storing data whose image is to be displayed and applying the data as control electric signals to either said set of column electrodes or said set of row electrodes for independently controlling the electrical energization potentials applied to selected ones of the dot-like areas, and time division multiplexing circuit means providing discrete signals unique to particular ones or the other of either said set of row or said set of column electrodes for causing desired ones of the dot-like areas selectively and time sequentially to be energized in accordance with the data to be presented and for moving the image of the data thus displayed left, right, up or down across the display panel in the manner of a traveling sign.

4,386,352

MATRIX TYPE LIQUID CRYSTAL DISPLAY

Heisaku Nonomura, Nara; Keiichiro Shimizu, Yamatokoriyama; Kohei Kishi, Tenri, and Hisashi Uede, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 10,322, Feb. 7, 1979. This application Jan. 30, 1981, Ser. No. 229,846

Claims priority, application Japan, Feb. 8, 1978, 53-13766; Feb. 8, 1978, 53-13767; Feb. 13, 1978, 53-15583

Int. Cl.³ G09G 3/36

U.S. Cl. 340—784 **14 Claims**

1. A matrix type display device and driving system comprising:

a matrix panel including,

a plurality of gate lines,

a plurality of source lines disposed normal to said gate lines and forming a plurality of intersections therebetween;

a plurality of transistors, one of said transistors disposed at each of the intersections between said gate lines and source lines, each of said transistors having a control terminal and first and second controlled terminals, the first controlled terminal of each of said transistors being connected to a respective one of said source lines, the gate terminal of each of said transistors being connected to a respective one of said gate lines;

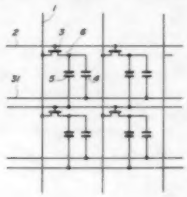
a plurality of common lines disposed normal to said source lines;

liquid crystal material disposed between said common lines and the second controlled terminals of said transistors, said liquid crystal material forming a plurality of liquid crystal matrix display elements, each element corresponding to a respective transistor and having first and second element terminals, the first element terminal of each of said display elements being connected to the second controlled terminal of its respective transistor, the second element terminal being connected to a respective common line; and

capacitance means disposed between the second controlled terminal of each transistor and one of said gate lines not connected to that transitor;

source line driving means for driving each of said source lines with a first voltage waveform and subsequently driving each of said source lines with a second voltage waveform, said source line driving means alternately and sequentially driving said source lines with said first and second voltage waveforms;

gate line driving means for periodically and sequentially driving each of said gate lines with individual gate pulses;



said first and second waveforms each having a period equal to the time necessary to sequentially address all of said gate lines, each of said first and second voltage waveforms being divided into a plurality of waveform portions, each corresponding to an individual gate pulse and thus to the coloration state of a respective individual display element;

each individual waveform portion of said first waveform including positive and negative voltage components of substantially equal voltage greater than the coloration threshold of said display when the respective individual display element is driven into coloration, said each individual waveform portion of said first waveform being of substantially zero voltage in the absence of desired coloration of said respective element;

each individual waveform portion of said second waveform including positive and negative voltage components of substantially equal voltage greater than the coloration threshold of said display to drive its respective individual display element in the absence of a desired coloration, said each individual waveform portion of said second waveform being substantially zero when coloration of its respective display element is desired;

said individual gate pulses driving their respective transistors to apply a first applied voltage waveform to the first element terminal of the respective display element when a waveform portion having said positive and negative voltage components is applied to said first controlled terminal of said transistor; and

common line drive means for applying a second applied voltage waveform corresponding to the first applied voltage waveform but of opposite polarity to each common line in synchronism with the application of a respective gate pulse during the application of said second waveform.

4,386,353

THRESHOLD CIRCUIT FOR RADAR VIDEO SIGNALS

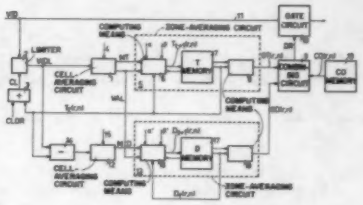
Hendrik C. Bleijerveld, Borne, and Bernard H. M. Oude Elberink, Oldenzaal, both of Netherlands, assignors to Hollandse Signaalapparaten B.V., Hengelo, Netherlands

Filed Dec. 4, 1980, Ser. No. 212,777

Claims priority, application Netherlands, Dec. 10, 1979, 7908860

Int. Cl.³ G01S 7/28

U.S. Cl. 343—7 A **7 Claims**



1. A threshold circuit for radar video signals, where the radar coverage is divided into zones constituted by azimuth sectors and range rings, the zones being subdivided into cells formed by radar scans and range quants, which threshold circuit contains a first cell-averaging circuit for determining, from the video signals received in the individual cells, the average echo strength (MT) in each zone pertaining to the azimuth sector that has been scanned by the radar beam, characterized in that the threshold circuit comprises a first zone-averaging circuit, connected to the first cell-averaging circuit, for determining, from the last established average echo strength (MT) of a zone, from the average echo strength ($T_f(r,n)$) of said zone as established after the previous scanning of the relevant azimuth sector by the radar beam, and from the average echo strength of zones adjoining the azimuth and range, a new average echo strength (GT(rn,)) of the zone, means for deriving a threshold level (DR) from the new average value (GT(r,n)), and gate circuit means to which the threshold level is applied for passing the video signals received in the individual cells of the relevant zone if said video signals exceed the threshold level (DR).

4,386,354

ELECTROMAGNETIC NOISE SUPPRESSION

Andrew W. D. Watson, Emsworth, England, assignor to Plessey Overseas Limited, Illford, England

Filed Dec. 15, 1980, Ser. No. 216,753

Int. Cl.³ G01S 7/36

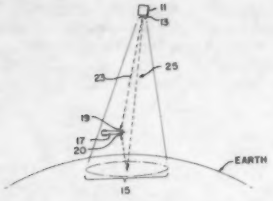
U.S. Cl. 343—18 A **10 Claims**

1. A method for reducing electromagnetic re-radiation of harmonic and intermodulation products by metal structures, having at least two adjoining elements, in response to an incident electromagnetic signal (rusty bolt effect), the method comprising providing a layer of non-water soluble substance having a dielectric constant greater than 10 between said adjoining elements forming a junction.

4,386,355
SYSTEM FOR DETERMINING THE LOCATION OF AN AIRBORNE VEHICLE TO THE EARTH USING A SATELLITE-BASE SIGNAL SOURCE

Prentis B. Drew, Kirkland, and Ervin J. Nalos, Bellevue, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Mar. 31, 1980, Ser. No. 135,440
Int. Cl.³ G01S 5/10
U.S. Cl. 343—112 D **7 Claims**



1. A passive system for ascertaining information concerning the position of an airborne vehicle relative to the earth comprising:

a signal source located on a base remote from the airborne vehicle;

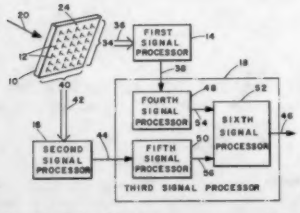
antenna means located on the airborne vehicle for receiving (a) a set of incident signals, said incident signal set comprising signals generated by said signal source and transmitted directly to said antenna means from said signal source, and for receiving (b) a set of reflected signals, said reflected signal set comprising the same signals generated by said signal source but which have been reflected from the earth prior to reaching said antenna means; and

means on the airborne vehicle for processing differences in selected characteristics of said incident and reflected sets of signals received by said antenna means, taking into account the angle, if any, between said signal source and the airborne vehicle, including means for comparing the times of receipt of said incident and reflected sets of signals and means for calculating the altitude of the airborne vehicle from the difference in the times of receipt of said incident and reflected sets of signals.

4,386,356
ANTENNA SYSTEM EMPLOYING A SELF-REFERENCING MICROWAVE INTERFEROMETER FOR DIRECTION FINDING

Gus P. Tricoles, San Diego, and Eugene L. Rope, El Cajon, both of Calif., assignors to General Dynamics/Electronics Division, San Diego, Calif.

Filed Oct. 17, 1979, Ser. No. 85,408
Int. Cl.³ G01S 5/02
U.S. Cl. 343—113 R **8 Claims**



7. A self referencing interferometer, comprising:

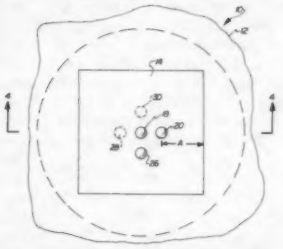
a slab of dielectric material for passing incident plane waves and for guiding coherent waves excited by the incident plane waves, whereby the guided waves interfere with the incident plane waves passing through the slab to form intensity fringe patterns, wherein the fringe spacing in a given dimension along the non-incident surface of the slab equals $2\pi(K_g - K_o \sin\theta)^{-1}$, wherein K_g is the propagation constant of the dielectric material, K_o is the propagation constant of free space, and θ is the angle between the normal to the incident surface of the slab and the direction of the incident plane waves;

an array of sensors distributed on the non-incident surface of the slab for providing sensing signals that indicate the intensity of the interfering waves at predetermined locations on the non-incident surface of the slab.

4,386,357
PATCH ANTENNA HAVING TUNING MEANS FOR IMPROVED PERFORMANCE

Paul D. Patton, Denver, Colo., assignor to Martin Marietta Corporation, Bethesda, Md.

Filed May 21, 1981, Ser. No. 265,962
Int. Cl.³ H01Q 1/38
U.S. Cl. 343—700 MS **11 Claims**

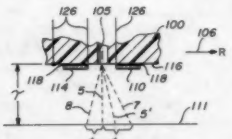


1. In a patch antenna comprising a planar conductive patch disposed closely over a ground plane, having shorting means shorting the conductive patch to the ground plane at a central point and feed means attached to the conductive patch at a point between the shorting means and the edge of the patch for conducting electromagnetic energy to or from said conductive patch, the improvement comprising passive matching means for tuning said antenna to improve its performance, said matching means comprising a conductive member extending at least partially between said ground plane and said conductive patch at a point located on the opposite side of said shorting means from said feed means.

4,386,358
INK JET PRINTING USING ELECTROSTATIC DEFLECTION

Kenneth H. Fischbeck, Dallas, Tex., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 22, 1981, Ser. No. 304,493
Int. Cl.³ G01D 15/16
U.S. Cl. 346—1.1 **3 Claims**



1. A method of correcting droplet placement errors caused by droplet ejection velocity variation in an oscillating bar ink jet printer, which comprises:

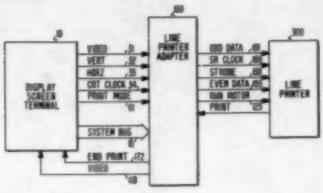
electrostatically deflecting droplets in a direction to compensate for approximately one-half of the bar velocity induced droplet placement error.

4,386,359

LINE PRINTER ATTACHMENT

John L. Regehr, Stewartville, and Phillip C. Schloss, Rochester, both of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 4, 1982, Ser. No. 336,649
Int. Cl.³ G01D 9/00
U.S. Cl. 346—35 6 Claims



1. A line printer attachment for a line printer having a number of print elements corresponding to horizontal row of video dot positions in a display screen terminal having display storage for storing data to be displayed, a display screen controller connected to receive display data from said display storage and operable to generate video control signals, a character generator connected to receive display data from said display screen controller and convert said display data to displayable data, video serializer means connected to receive said displayable data from said character generator and operable to serialize said displayable data into serial video data and responsive to video control signals from said display screen controller to generate horizontal, vertical and display clocking signals, and a display screen for displaying said serial video data along said horizontal rows of dot positions, said line printer having buffer means for buffering said serial video data in response to a print initiate signal, comprising:

print initiate means responsive to signals from said video serializer for generating a print initiate signal when the last line is to be displayed by said display screen terminal, and

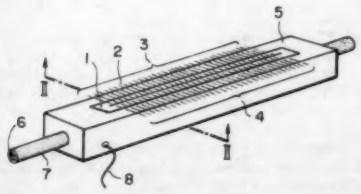
gating means connected to receive said serial video data from said video serializer means and to receive said print initiate signal and operable to pass said serial video data to said display screen in the absence of said print initiate signal and to block said serial video data from passing to said display screen during the presence of said print initiate signal and instead pass said serial video data to said line printer.

4,386,360

HEAT-SENSITIVE RECORDING HEAD

Tomio Murayama; Haruhiko Moriguchi; Fujio Moriguchi, and Takashi Ohmori, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Aug. 28, 1981, Ser. No. 296,935
Claims priority, application Japan, Sep. 1, 1980, 55-119717
Int. Cl.³ G01D 15/10
U.S. Cl. 346—76 PH 10 Claims



1. A heat-sensitive recording head for recording an image on a recording sheet, having heat generating elements arranged on an insulating substrate, comprising:

a heat sink positioned in operative relation to said heat generating elements through said insulating substrate; and

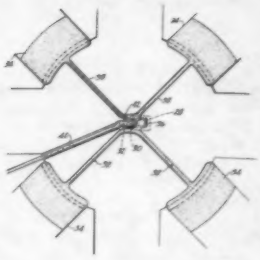
means for controlling the temperature of said heat sink independently of said heat generating elements, comprising a means for heating said heat sink and a means for sensing the temperature of said heat sink and producing a signal indicative thereof.

4,386,361

THIN FILM SQUID WITH LOW INDUCTANCE

Michael B. Simmonds, Del Mar, Calif., assignor to S.H.E. Corporation, San Diego, Calif.

Filed Sep. 26, 1980, Ser. No. 191,176
Int. Cl.³ H01L 39/22; H03K 3/38
U.S. Cl. 357—5 10 Claims



1. A thin-film SQUID device comprising: a substrate, a superconductive layer on the substrate having an outer closed superconductive loop and a first group of radial superconductive arms extending from the loop and intersecting in a common conductive region, a second group of radial superconductive arms extending inwardly from and in electrical contact with said loop at points intermediate the first group of arms and intersecting in a common conductive region overlying the common conductive region of said first group of arms, an insulating layer between said common regions, thin film Josephson junction means positioned in electrical contact with said two common regions, and a signal coil forming conductive loops, the coil having portions extending parallel to said two groups of arms for inductively coupling the coil to the superconductive arms.

4,386,362

CENTER GATE SEMICONDUCTOR DEVICE HAVING PIPE COOLING MEANS

Sebastian W. Kessler, Jr., and Robert E. Reed, both of Lancaster, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 26, 1979, Ser. No. 107,014
Int. Cl.³ H01L 23/48, 29/44, 29/52
U.S. Cl. 357—68 33 Claims

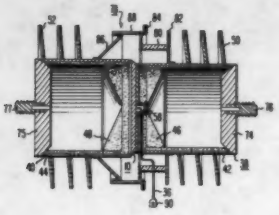
1. A transcalent semiconductor device compises:

a body of semiconductor material having first and second major opposed surfaces, said first surface including at least one region of first type conductivity and a region of opposite type conductivity;

a first electrical contact means disposed on said first surface, said first contact means comprising a first heat pipe having an external surface, an internal surface with a porous wick liner bonded thereto and a conductive contact disc in electrical and thermal contact with substantially all of said first surface, said contact disc having an aperture extending therethrough;

control means for initiating conduction through said semiconductor material, said control means extending through said external and internal surfaces and through said porous

wick liner of said heat pipe and communicating through said aperture with a portion of said first surface comprising the region of opposite type conductivity; and



a second electrical contact means disposed on said second surface in an electrical and thermal conductive relationship therewith.

4,386,363

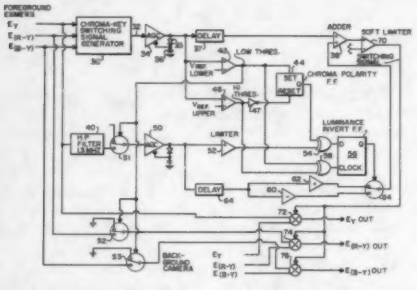
CHROMA KEY SWITCHING SIGNAL GENERATOR

Eric F. Morrison, Redwood City, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Apr. 10, 1981, Ser. No. 252,864

Int. Cl.³ H04N *9/535*

U.S. Cl. 358—22 **9 Claims**



1. In a television system having a video signal including wideband luminance and narrower-band chrominance signals, means for generating a wideband chroma key switching signal comprising:

means for generating a narrower-band chroma key switching signal from said chrominance signals;

means for generating a further signal consisting of high frequency components of said luminance signal corresponding to the transitions of said narrower-band chroma key switching signal; and

means responsive to said means for generating said further signal for adding said components to said narrower-band chroma key switching signal.

4,386,364

IMAGE DISPLAY APPARATUS

Satoshi Shimada, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 10, 1981, Ser. No. 300,962

Claims priority, application Japan, Sep. 12, 1980, 55-126876; Sep. 20, 1980, 55-131068

Int. Cl.³ H04N *9/22, 5/68*

U.S. Cl. 358—66 **19 Claims**

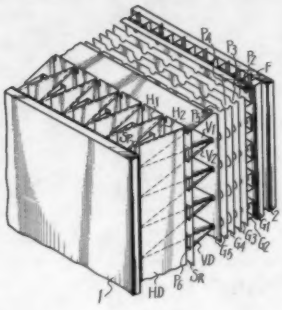
1. An image display apparatus for displaying an image from a video signal having a horizontal period, comprising:

a phosphor screen having portions aligned horizontally and vertically in rows and columns, respectively;

electron gun means associated with each of said portions of said phosphor screen;

horizontal and vertical deflection means associated with each of said portions of said phosphor screen;

means for simultaneously driving said horizontal deflection means associated with each row of said horizontally aligned portions of said phosphor screen;



means for driving said vertical deflection means in a step-like manner in synchronism with said horizontal period;

means for storing at least one horizontal period of said video signal; and

means for dividing the stored video signal corresponding to said phosphor screen portions and supplying the divided video signal to said electron gun means associated with the respective phosphor screen portions.

4,386,365

COMBINED WIRED BROADCASTING AND VIEWPHONE SYSTEM

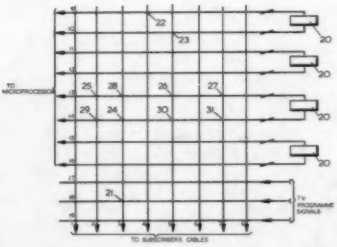
Eric J. Gargini, West Drayton, England, assignor to Communications Patents Limited, London, England

Filed Jun. 2, 1980, Ser. No. 155,076

Claims priority, application United Kingdom, Jun. 19, 1979, 7921335

Int. Cl.³ H04N *7/14*

U.S. Cl. 358—85 **7 Claims**



1. A wired broadcasting system comprising a plurality of subscriber stations each connected to a central exchange by a respective transmission cable, a plurality of bus-bars located at the central exchange, a plurality of program sources for applying television signals at a first frequency to respective bus-bars, a plurality of switches located at the central exchange for selectively connecting each subscriber cable to any one of the bus-bars, and at least one receiver at each subscriber station for receiving signals at said first frequency, each subscriber station being provided with means for controlling said switches, and at least two subscriber stations being provided with means for generating television signals at a second frequency and for

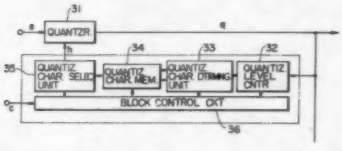
applying the generated signals to said cables, characterised in that at least one pair of said bus-bars are interconnected by a two-way frequency changer adapted to convert signals at said second frequency on either bus bar of said pair to signals at said first frequency and to apply the converted signals to the other bus-bar of said pair whereby two-way visual communication can be established between said at least two subscriber stations via said frequency changer.

4,386,366

ADAPTIVE TYPE QUANTIZER

Sumio Mori, Asaka, Japan, assignor to Fuji Photo Film Co. Ltd., Kanagawa, Japan

Filed Mar. 16, 1981, Ser. No. 244,478
Claims priority, application Japan, Mar. 26, 1980, 55-38408
Int. Cl.³ H04N 7/12
U.S. Cl. 358—135 **2 Claims**



1. A method for adaptively quantizing sampled input picture element values in which an estimation error obtained from a sampled input picture element value and the estimation value thereof are adaptively quantized by selecting one of a plurality of quantization characteristics, comprising the steps of:

determining quantization steps for said quantization characteristics;

dividing a group of input picture elements in to m adjacent blocks each having a plurality of picture elements for every line on an image, m quantization characteristic selection memories being provided in correspondence to said m blocks;

setting with a quantization characteristic determining unit, according to the distribution of quantization level values provided when said estimation errors in one of said blocks are quantized with a selected quantization characteristic, a quantization characteristic to be used for the next block; and

selecting with a quantization characteristic selecting unit a quantization characteristic set by said quantization characteristic determining unit out of said plurality of quantization characteristics, wherein

for every block in a line to be quantized, said quantization characteristic to be used for the corresponding block in the next line is set by said quantization characteristic determining unit according to the distribution of said quantization level values in said block and the current quantization characteristic set to store a quantization characteristic symbol to be used at a predetermined address in said quantization characteristic selection memories, and wherein

in quantizing each block, said quantization characteristic selecting unit refers to said quantization characteristic symbols stored in said predetermined address corresponding to said block in said quantization characteristic selection memories to select a quantization characteristic for said block; and

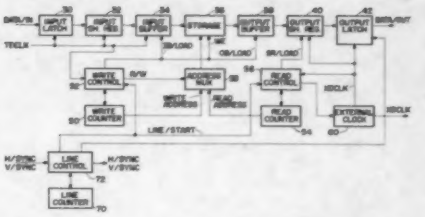
quantizing said estimation errors in a predetermined block using said quantization characteristic which is selected by said quantization characteristic selecting unit.

4,386,367

SYSTEM AND METHOD FOR CONVERTING A NON-INTERLACED VIDEO SIGNAL INTO AN INTERLACED VIDEO SIGNAL

James R. Peterson, and Douglas J. Doornink, both of Portland, Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Jun. 26, 1981, Ser. No. 277,788
Int. Cl.³ H04N 5/02
U.S. Cl. 358—140 **20 Claims**



1. A system for converting successive frames of a non-interlaced video signal into successive fields of an interlaced video signal, said system comprising:

(a) input means for receiving an input signal defining successive frames of a non-interlaced raster-scan video image, each said frame comprising plural raster lines of video information;

(b) output means for producing, concurrent with the receipt of a first frame of said input signal, a first output signal defining every other raster line of said first frame, and, concurrent with the receipt of a next succeeding frame of said input signal, a second output signal defining the alternate raster lines of said next succeeding frame;

(c) the receipt by said input means of a portion of said input signal defining every other raster line of said first frame being interleaved with the production of said first output signal by said output means defining said every other raster line of said first frame; and

(d) the receipt by said input means of a portion of said input signal defining the alternate raster lines of said next succeeding frame being interleaved with the production of said second output signal by said output means defining said alternate raster lines of said next succeeding frame, whereby said system is operated in a first-in/first-out manner.

4,386,368

MEMORY CONSERVATION METHOD IN A PROGRAMMABLE ROM SYNC GENERATOR SYSTEM

Arthur J. Banks, Cherry Hill, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 29, 1981, Ser. No. 306,605
Claims priority, application United Kingdom, Apr. 1, 1981, 8110218
Int. Cl.³ H04N 5/06
U.S. Cl. 358—150 **6 Claims**

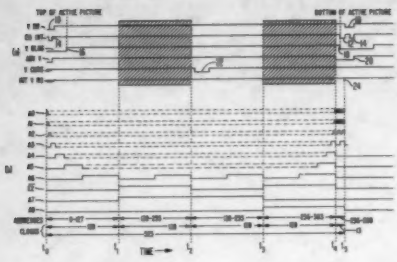
1. A television synchronization signal generator for generating at least one synchronizing signal having at least a first time interval during which the amplitude of said signal remains a constant, said generator comprising

memory means for storing amplitude information of said signal at each of a predetermined plurality of memory locations;

clock signal generating means coupled to said memory means for generating periodic sampling signals for recurrently clocking said memory means for reading said information from said memory for generating said synchronization signal; and

counter means coupled to said clock signal generating means

and to said memory means for determining said first time interval from said sampling signals and for addressing said



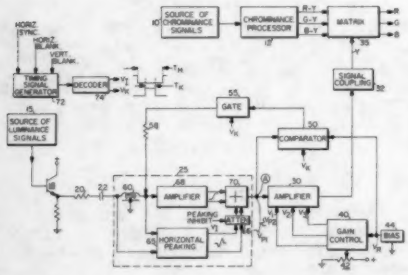
memory means except during at least said first time interval.

4,386,369

COMPENSATED CLAMPING CIRCUIT IN A VIDEO SIGNAL PEAKING SYSTEM

Robert L. Shanley, II, and Robert P. Parker, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Sep. 22, 1981, Ser. No. 304,345
Int. Cl.³ H04N 5/14
U.S. Cl. 358—166 **11 Claims**



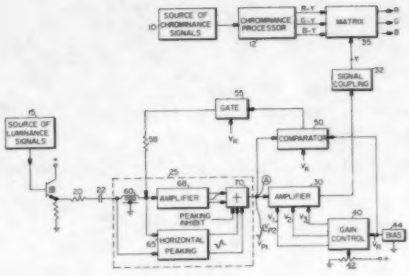
1. A video signal processing system comprising:
a source of video signals comprising image intervals and blanking intervals including a reference interval containing a reference level;
a video signal processing path, including means responsive to said video signals for generating a peaking component at an output, and means for combining said peaking component with said video signal to produce a peaked video signal;
a control network responsive to said peaked video signal during said reference intervals and coupled to said video signal path for automatically maintaining a desired condition of the reference level of video signals processed by said video path; and
means for attenuating the signal output of said peaking component generating means during said reference intervals.

4,386,370

CLAMPING ARRANGEMENT FOR A VIDEO SIGNAL PEAKING SYSTEM

Leopold A. Harwood, Bridgewater, N.J., and Robert L. Shanley, II, Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Sep. 22, 1981, Ser. No. 304,346
Int. Cl.³ H04N 5/14
U.S. Cl. 358—166 **16 Claims**



1. A video signal processing system comprising:
a source of video signals comprising image intervals and blanking intervals including a reference interval containing a reference level;
a video signal path having a signal input;
a peaking signal path having a signal input; and including means for generating a signal peaking component;
an input circuit including a capacitor for AC coupling video signals from said source to said inputs of said video signal path and said peaking signal path;
a combining network for combining video signals from said video path with said peaking component from said peaking path to produce a peaked video signal;
a utilization network responsive to said peaked video signal;
a control network for sensing said video signal reference level during said reference intervals to develop an output control voltage in response to the sensed condition of said video signal reference level; and
means for coupling said control voltage to said input AC coupling capacitor at said inputs of said video signal and peaking paths, with a sense for modifying the charge stored on said capacitor in a direction to maintain a desired condition of said video signal reference level.

4,386,371

WIRED REMOTE CONTROL APPARATUS FOR A TELEVISION RECEIVER

John B. George, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

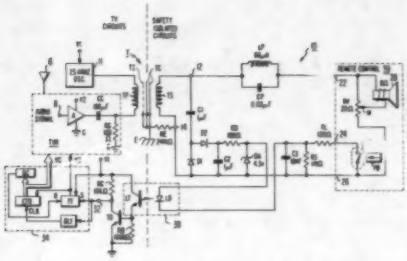
Filed Jul. 28, 1981, Ser. No. 287,561
Int. Cl.³ H04N 5/44, 5/60
U.S. Cl. 358—194.1 **10 Claims**

1. In an apparatus for reproducing sound at an isolated loudspeaker including:
a transformer having a first winding and having a second winding magnetically coupled to said first winding but electrically insulated therefrom,
a source of audio signals and means for coupling said audio signals to said first winding, and
a loudspeaker to which said second winding is coupled for reproducing sound in response to said audio signals;
apparatus for remotely controlling said source comprising:
an oscillator for providing, at least at times when said audio signals are not present, an oscillator signal at a frequency other than that of said audio signals;

means for coupling said oscillator signal to said first winding;

coupling means having an input circuit and having an output circuit coupled to its input circuit for responding to electrical signals applied thereto, wherein said output circuit is electrically insulated from said input circuit;

a switch for selectively coupling said audio signals and said oscillator signals present at said second winding to the input circuit of said coupling means; and



control means to which the output circuit of said coupling means is coupled for controlling said source in response to said audio signals and said oscillator signals present.

8. The apparatus of claim 1 wherein said source is included within a television receiver receiving a plurality of television channels, said control means developing a first control signal for activating said source and developing a second control signal for selecting ones of said television channels.

4,386,372

OPTICAL MIRROR ADJUSTMENT MEANS FOR A PROJECTION TELEVISION RECEIVER

Robert E. Slater, Vernon Hills, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Aug. 31, 1981, Ser. No. 297,885

Int. Cl.³ H04N 5/74

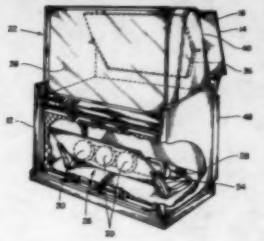
U.S. Cl. 358—237 **3 Claims**

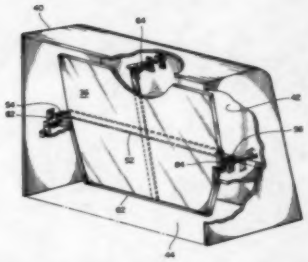
1. For use in a projection television system having a rear projection viewing screen, mirror adjustment means for adjusting the reflection angles of a mirror included in a folded optical path, said mirror disposed within a housing and facing an open side of said housing said open side being closed by said screen, said mirror having a major horizontal axis established in the vicinity of the central portion of said mirror, said mirror serving to reflect an aerial image of a projected television image onto said screen, said mirror adjustment means disposed within said housing and comprising:

pivot means, located at opposite sides of said mirror along said major horizontal axis and supporting said mirror for rotation about said axis to permit tilting of said mirror in elevation,

exteriorly accessible first screw means, coupled to said mirror for rotating said mirror upon said pivot means about said horizontal axis for positionally adjusting and fixing said mirror in a desired elevation angle;

exteriorly accessible second screw means coupled to said pivot means for displacing said pivot means to rotate said mirror about an axis orthogonal to said major horizontal axis to positionally adjust and fix said mirror azimuthally;





such that said mirror can be adjusted, without opening said housing, to reflect said aerial image along said optical path into precise coincidence with said viewing screen.

4,386,373

FACSIMILE APPARATUS

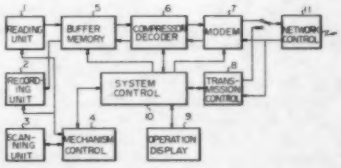
Mitsuru Kondo, and Akira Konishi, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jul. 13, 1981, Ser. No. 282,973

Claims priority, application Japan, Jul. 18, 1980, 55-97566; Oct. 27, 1980, 55-149380; Oct. 27, 1980, 55-149381

Int. Cl.³ H04M 1/38

U.S. Cl. 358—260 **6 Claims**



1. A facsimile apparatus including scanning means, buffer memory means having a predetermined capacity for storing data from the scanning when the apparatus operates in a transmission mode, compression means for encoding and compressing data from the buffer memory means and producing coded or compressed data in lines when the apparatus operates in a transmission mode, characterized by comprising:

first fill bit generator means for producing fill bits which are added to each line of compressed data when an actual duration of compressed data on a line is shorter than a predetermined reference duration;

second fill bit generator means for producing fill bits which are added to each predetermined number of plural lines of compressed data when an actual duration of compressed

data on plural lines is shorter than a predetermined reference duration; and

control means for controlling the first and second fill bit generator means to actuate at least one of the first and second fill bit generator means depending at least upon the capacity of a buffer memory means and the speed of a recording unit at a remote receiver which said apparatus is call up for communication.

4,386,374

ELECTRONIC DUPLICATOR WITH A LINE BUFFER MEMORY

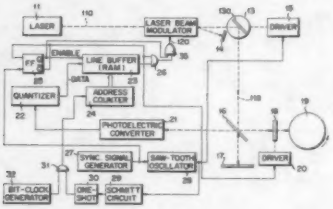
Katsumi Kimoto, Kawasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 20, 1979, Ser. No. 105,863

Claims priority, application Japan, Dec. 27, 1978, 53-180546[U]; Mar. 7, 1979, 54-26307

Int. Cl.³ H04N *1/24, 5/84;* **G01D** *15/14*

U.S. Cl. 358—302 **2 Claims**



1. An electronic duplicator for copying information from an original document comprising:

a light sensitive drum;

light source means for generating a single source light beam;

modulator means for selectively modulating said single source light beam to form a modulated source beam;

light beam scanner means for controllably deflecting said source beam having passed through said modulator;

half mirror means, positioned so as to receive light deflected by said scanner, for splitting said single source beam into a first beam for irradiating said original document and a second beam for irradiating said light sensitive drum;

shutter means, positioned in the path of said second beam between said half mirror means and said photosensitive drum, for controllably blocking or passing said second beam;

photoelectric converter means, positioned so as to receive said first light beam having been reflected from said original document and carrying information from said original document, for generating electrical signal readout data;

line buffer memory means, coupled to said photoelectric converter means, for storing one line of said readout data;

timing control means for controlling the sequence of operation of said shutter means, scanner means and modulator means, said timing control means including a synchronizing signal generator means for producing a synchronizing signal in accordance with a period for scanning one line of the original document by said scanner means, a circuit for producing a saw-tooth wave in accordance with a synchronizing signal output of said synchronizing signal generator means, and a means for driving said scanner means in accordance with said saw-tooth wave, for (a) during a rising period of a first saw-tooth wave, holding said shutter means closed while simultaneously causing said scanner means to deflect the source beam so that said first beam scans a first line of information on said original document, said first line of information being converted into electric signal readout data by said photoelectric converter means and stored in said line buffer memory means, said scanner means returning to its original position during a falling period of said first saw-tooth wave and (b) during a rising period of a second saw-tooth wave following said first saw-tooth wave, causing readout data stored in said line buffer memory means to be read therefrom and coupled to a modulating input of said modulator means while simultaneously holding said shutter means open so that said second beam irradiates said light sensitive drum thereby imparting the information of said first line thereof, the scanner means returning to its original position during a falling period of said second saw-tooth wave; and

memory control means for applying said electric signal readout data from said photoelectric converter means into said line buffer memory means during said rising period of said first saw-tooth wave and for preventing said electric signal readout data from being applied to said line buffer memory during said rising period of said second saw-tooth wave.

4,386,375

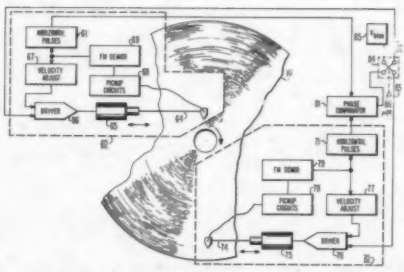
VIDEO DISC PLAYER WITH MULTIPLE SIGNAL RECOVERY TRANSDUCERS

Ted N. Altman, East Windsor, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 24, 1980, Ser. No. 190,275

Int. Cl.³ H04N *9/491, 5/76;* **G11B** *5/012*

U.S. Cl. 358—327 **6 Claims**



1. A video disc player of the type for recovering video signal from information bearing tracks disposed on a disc record, said video signal being formatted in fields having vertical, horizontal, and chrominance synchronization signal components, every Nth field having similar in-phase synchronization components and wherein M fields are disposed per 360° of the information track, and multiples of every Nth field being radially aligned in adjacent tracks, said player comprising:

a base for rotatably supporting said disc record;

at least two signal recovery systems having respective output terminals and having signal transducers disposed at N/M times 360° or a multiple thereof relative to each other to recover signal from the disc record;

means responsive to the synchronization components of the recovered signals at said output terminals for adjusting the angular position of at least one of the signal transducers relative to at least one other of the signal transducers in a direction to reduce signal phase differential between the synchronization components of signal recovered by said at least one and said at least one other signal transducer;

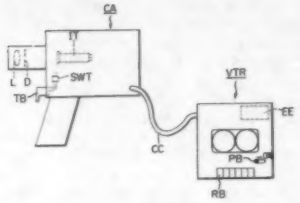
means for radially translating said signal transducers independently of each other to preselected video signal fields; and

means for selectively applying signal from said respective output terminals to a display means.

4,386,376
VIDEO CAMERA

Hiroyuki Takimoto, Yokohama, and Tatsuzo Ushiro, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo Japan

Filed Dec. 31, 1980, Ser. No. 221,785
Claims priority, application Japan, Jan. 15, 1980, 55-2862[U]
Int. Cl.³ H04N 5/78; G11B 31/00
U.S. Cl. 358—335 11 Claims



1. A video recording system comprising in combination:

(A) image pick-up means for generating signals indicative of image scansion;

(B) processing circuit means for processing said signals generated by said image pick-up means to produce video signals;

(C) recording means for recording said video signals produced by said processing circuit means, said recording means having an inoperative state, a standby state for preparation of signal recording and an operative state for actual signal recording; and

(D) setting means including:

(1) first means for energizing said image pick-up means and for setting said recording means to its standby state from its inoperative state;

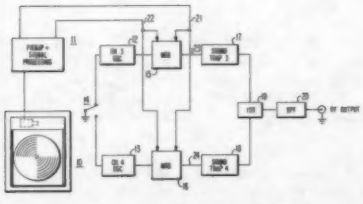
(2) second means for energizing said processing circuit means; and

(3) third means for generating a control signal for setting said recording means to its operative state from its standby state.

4,386,377
TV INTERFACE RF MODULATION CIRCUITRY

Richard E. Hunter, Jr., Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 10, 1981, Ser. No. 253,012
Int. Cl.³ H04N 5/76, 5/40, 5/21
U.S. Cl. 358—335 6 Claims



1. The combination for selectively generating a modulated radio frequency carrier signal at one of a first and second television channel carrier frequencies comprising:

a source of modulating signal;

first and second oscillator circuits for generating first and second radio frequency carrier signals corresponding to adjacent television channel frequencies;

a first modulator circuit responsive to said first carrier signal and to said modulating signal for producing at an output terminal thereof said first carrier signal modulated in accordance with said modulating signal;

a second modulator circuit responsive to said second carrier signal and to said modulating signal for producing at an output terminal thereof said second carrier signal modulated in accordance with said modulating signal;

first and second band rejection filter circuits having respective input terminals connected respectively to the output terminals of said first and second modulator circuits, and having respective output terminals, said first and second band rejection filters having respective stop bands located at 4.5 MHz below the first and second carrier frequencies respectively;

a bandpass filter having an input and an output terminal from which said modulated signal is available, the pass band of said band pass filter extending substantially from the lower cut off frequency corresponding to the television channel associated with the lower of the first and second carrier frequencies, to the upper cut off frequency corresponding to the television channel associated with the other of said first and second carrier frequencies;

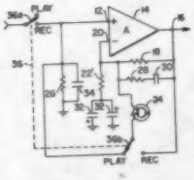
isolation circuitry for coupling the output terminals of each of the first and second band rejection filters to the input terminal of said bandpass filter, said isolation circuitry substantially electrically isolating the first modulated carrier from the second band rejection filter and the second modulated carrier from the first band rejection filter; and

means for selectively enabling one and disabling the other of said first and second oscillators.

4,386,378
HIGH GAIN, CURRENT MODE PREAMPLIFIER

Barrett E. Guisinger, Saratoga, Calif., assignor to Sony Corporation, Japan

Filed Jan. 23, 1981, Ser. No. 227,614
Int. Cl.³ G11B 5/09, 5/02
U.S. Cl. 360—46 8 Claims



1. A very high gain current mode preamplifier for recording and reproducing signals on magnetic media comprising

a circuit ground,

a differential amplifier having an inverting input terminal, a non-inverting input terminal and an output terminal,

a first resistance connected between the non-inverting input terminal and the circuit ground,

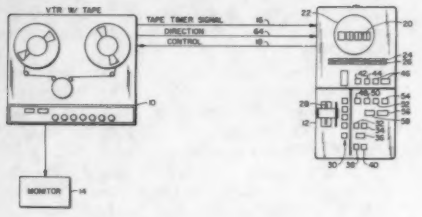
a second resistance connected between the inverting input terminal and the circuit ground, and

a third resistance connected between the output terminal and the inverting input terminal and further comprising a magnetic recording head connected in parallel with the third resistance.

4,386,379
VIDEOTAPE CUE CONTROL AND DISPLAY APPARATUS

Grant M. Smith, Menlo Park; Vinson R. Perry, San Carlos, and Bruce E. Busby, Mountain View, all of Calif., assignors to Sony Corporation, Japan

Filed Oct. 10, 1980, Ser. No. 195,824
Int. Cl.³ G11B *15/18, 19/02*
U.S. Cl. 360—72.3 **10 Claims**



1. Cue control apparatus for use in combination with a video tape recorder (VTR) of the type having a recording tape, means for recording signals on said tape and for reproducing output signals from said tape, tape drive means, and means for producing tape time signals corresponding to movement of said tape through a predetermined distance; the tape cue apparatus being electrically connected to said VTR and comprising

a tape time counter for counting said tape time signals and for producing corresponding count output signals;

a plurality of cue switch means;

a plurality of cue registers for storing count output signals supplied thereto, each of said cue registers having a separate one of said cue switch means assigned to it;

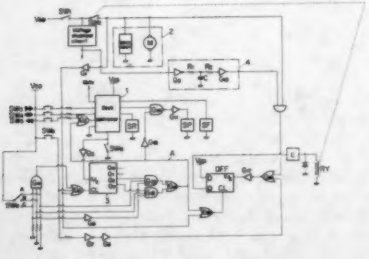
means for supplying said count output signals of said tape time counter to each cue register as its assigned cue switch means is actuated during movement of said tape; and

means for controlling said tape drive means in accordance with the count output signal stored in a selected one of said registers.

4,386,380
TAPE PLAYER CONTROL DEVICE

Yoshiharu Ueki, Kawagoe, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sep. 10, 1980, Ser. No. 185,686
Claims priority, application Japan, Sep. 11, 1979, 54-124625[U]
Int. Cl.³ G11B *15/22*
U.S. Cl. 360—74.1 **3 Claims**



1. In a tape player control device for selecting the tape playback operation mode, the device including:

fast-forward, replay and rewind push-button switches for tape fast-forward operation, replay operation and rewind operation, respectively,

solenoid fast-forward means for bringing the tape player into a fast-forward state and responsive to said fast-forward switch,

solenoid replay means for bringing the tape player into a playback state and responsive to said replay switch,

solenoid rewind means for bringing the tape player into a rewind state, and responsive to said rewind switch,

circuit control means for controlling the solenoid fast-forward means, replay means and rewind means, and cooperating with said fast-forward, replay and rewind switches,

said circuit control means comprising first and second flip-flops operating in response to signals produced upon closing of said fast-forward and rewind switches, respectively,

a monostable multivibrator triggered by a signal transmitted upon closing of said replay switch, and

means for resetting said first and second flip-flops upon receipt of the output of the monostable multivibrator, and

a tape end detecting switch operating in response to a signal representative of the end of the tape for triggering the monostable multivibrator,

the solenoid fast-forward means and rewind means being energized by the output of said first and second flip-flops, respectively,

the solenoid playback means being energized by the output of the monostable multivibrator,

the improvement comprising

a counter for counting the number of on/off operations of said tape end detecting switch,

a mode selection switch for changing the playback operation of the tape, and cooperating with said counter,

circuit selection means for selecting and blocking the output of said counter in accordance with a mode selection output of said mode selection switch,

an OR gate having an input connected to the output of said circuit selection means, or the output of said rewind switch, and having an output connected to said resetting means,

circuit means for blocking the output of said resetting means to the solenoid playback means in accordance with the output of said circuit selection means, and

circuit means for applying voltage to a deck assembly in synchronization with the loading operation of the tape, and cancelling the voltage application to the deck assembly in response to the output of said circuit selection means, whereby the tape playback operation mode is selected among unidirectional playback operation, automatic reverse playback operation in one and reverse directions, and automatic repeated reverse playback operation in one and reverse directions.

4,386,381
MAGNETIC REPRODUCING APPARATUS

Humio Itai, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 25, 1980, Ser. No. 180,994
Claims priority, application Japan, Sep. 14, 1979, 54-118077
Int. Cl.³ G11B *15/48*
U.S. Cl. 360—74.2 **32 Claims**

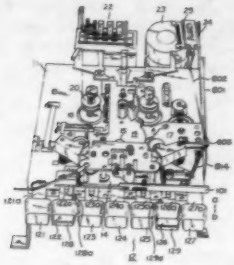
1. A magnetic reproducing apparatus employing a cartridge tape which contains a pair of reels and a magnetic tape wound thereon and having the opposite ends thereof securely fixed to said pair of reels respectively, said apparatus comprising:

a pair of spindles to which said pair of reels is removably attached;

fast driving means for driving said spindle in one direction such that the reel held on one of said spindles winds up the tape supplied from the other reel;

slow driving means for driving the other of said spindles in the other direction such that the reel held on said other spindle winds up said tape supplied from said one reel;

means for detecting stoppage of a tape running between said reels; and



means for releasing said fast driving means out of operation and setting said slow driving means into operation in response to said detecting means.

4,386,382

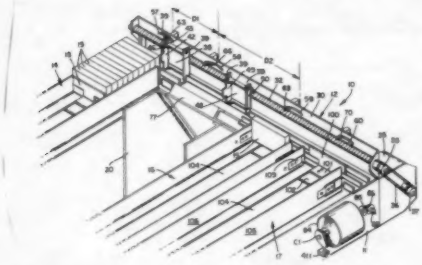
TIME INDEPENDENT CONTROLLER FOR CASSETTE CHANGING APPARATUS

Timothy D. Cutler, Atlanta, and Theodore Titus, IV, Tucker, both of Ga., assignors to Lanier Business Products, Inc., Atlanta, Ga.

Continuation-in-part of Ser. No. 78,232, Sep. 24, 1979. This application Sep. 29, 1980, Ser. No. 191,698

Int. Cl.³ G11B *15/68, 19/00*

U.S. Cl. 360—92 **7 Claims**



1. In an apparatus for successively engaging a plurality of discrete recording media with a transport mechanism comprising

a carriage means for moving one of said discrete recording media from a first location to a second location,

drive means for providing powered displacement of a driving member, the improvement of:

a coupling means for connecting said carriage means and said driving member of said drive means for moving said carriage means in response to said powered viding a displacement output signal proportional to total displacement of said driving member from a starting point;

a control means for terminating operation of said drive means in response to detection of a failure of said carriage means to move from said first location to said second location when said displacement output signal has reached a predetermined value.

4,386,383

MAGNETIC TRANSDUCER COMPRISING A GAP OF VARIABLE LARGER DIMENSION FOR READING AND WRITING DATA PRESENT ON A MAGNETIC CARRIER

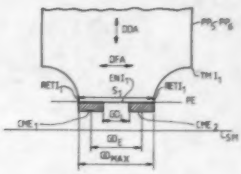
Jacques Desserre, Rambouillet; Michel Helle, Marcq, and Jean-Pierre Lazzari, Montfort l'Amaury, all of France, assignors to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme), Paris, France

Filed Mar. 12, 1981, Ser. No. 242,924

Claims priority, application France, Apr. 2, 1980, 80 07453

Int. Cl.³ G11B *5/22, 5/25, 5/20*

U.S. Cl. 360—126 **14 Claims**



1. A magnetic transducer adapted to perform read/write functions on a magnetic data carrier which travels before the same, the data being contained within a plurality of tracks on the carrier, comprising:

a magnetic circuit formed by two pole pieces separated by a gap parallel to the carrier, the gap having a larger dimension perpendicular to the direction of travel of the data of a track as it passes in front of said gap,

a winding coupled magnetically to the magnetic circuit, and first means disposed across each pole piece and on opposite sides of the gap in the direction of its larger dimension for effectively varying the larger dimension of the gap in accordance with the nature of the function performed by the transducer.

4,386,384

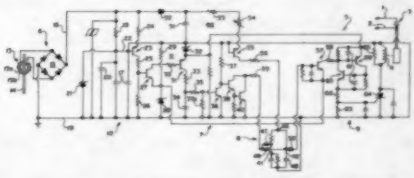
FAULT RESPONSIVE PROTECTIVE DEVICE

Richard J. Moran, Milwaukee, Wis., assignor to McGraw-Edison Company, Rolling Meadows, Ill.

Filed Dec. 15, 1981, Ser. No. 330,926

Int. Cl.³ H02H *3/08*

U.S. Cl. 361—94 **5 Claims**



1. In an improved fault responsive protective device which employs a time delay that is inversely proportional to fault magnitude by varying the voltage level of a timing capacitor at a rate which is proportional to fault magnitude until a predetermined voltage level is reached at said timing capacitor, which enables the protective device to respond to the fault, wherein the improvement comprises:

a master timing capacitor;

a charging means to cause current to flow into said master timing capacitor; and

coupling means between said master timing capacitor and said timing capacitor which clamps the voltage level of said timing capacitor to a value slightly in excess of the voltage level of said master timing capacitor, whereby said fault responsive protective device is inhibited from operating

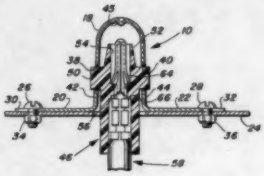
before the voltage level of said master timing capacitor closely approaches said predetermined voltage level.

4,386,385

SPARK ELECTRODE ASSEMBLY

Martin W. Hamilton, Arlington Heights, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed Aug. 7, 1980, Ser. No. 175,981
Int. Cl.³ F24C 3/10
U.S. Cl. 361—253 **15 Claims**



8. An electrical spark ignition system for igniting a combustible air-fuel mixture, comprising:

(a) shroud means including a member with first integral surface portions thereof forming one electrode and with second integral surface portions thereof spaced from said first portions said second surface portions defining locking means adapted for locking insulator attachment thereto, said member having third integral portions adapted for connection to a support, whereupon said shroud and said one electrode are electrically grounded;

(b) insulator means received in said shroud means, said insulator means including a member having a hollow therein and having surface mounting portions formed thereon external with respect to said hollow, with said mounting portions engaging said shroud second surface portions locking means in snap-locking engagement for retaining said insulator in said shroud means;

(c) electrical lead means received in said hollow including a clip member having one end portion thereof including means integral therewith defining a second electrode with other portions of said clip member engaging the inner periphery of said hollow in snap-locking engagement, said lead means including an electrical conductor having one end connected to said clip member and said second electrode and the other end extending from said insulator hollow for attachment thereto, said first and second electrodes being spaced a predetermined distance; and

(d) circuit means connected to said electrical lead means and connectable to a sufficient electrical potential such that upon application thereof a spark is discharged between said first and second electrodes for ignition of said mixture.

4,386,386

CAPACITOR TYPE SENSOR FOR DETECTING DISPLACEMENT OR LOAD

Sigeyuki Akita, Okazaki, Japan, assignor to Nippon Soken, Inc., Nishio, Japan

Filed Apr. 17, 1981, Ser. No. 255,273
Claims priority, application Japan, Apr. 22, 1980, 55-55789[U]; Apr. 22, 1980, 55-55790[U]
Int. Cl.³ H01G 7/00
U.S. Cl. 361—283 **7 Claims**

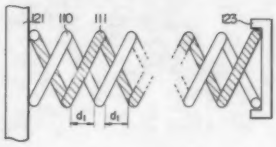
1. A capacitor type displacement or load sensor comprising:

a first electrode constituted by an electrically conductive coiled spring capable of expansion and contraction, said first electrode having one end thereof connected to a first conductor disposed on a fixed insulating member of said sensor and the other end thereof connected to a movable insulating member of said sensor; and

a second electrode connected at one end thereof to a second conductor disposed on said fixed insulating member of said sensor and positioned opposite to said first electrode without contacting the same;

whereby capacitance between said first and second electrodes varies in response to the expansion or contraction of said electrically conductive coiled spring, and

wherein said second electrode in constituted also by an electrically conductive coiled spring capable of expansion and contraction,



said second electrode having one end thereof connected to said second conductor on said fixed insulating member of said sensor and the other end thereof connected to said movable insulating member of said sensor, and

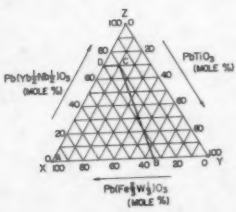
both electrically conductive coiled springs of said first electrode and said second electrode are combined to form a double coil spring without making contact with each other, whereby capacitance between said first and second electrodes varies with a change of an axial gap between both electrically conductive coiled springs.

4,386,387

LOW TEMPERATURE SINTERING PORCELAIN COMPOSITION

Hirayoshi Tanei, Tokyo; Akira Ikegami; Hideo Arima, both of Yokohama; Tokio Isogai, Fujisawa, and Kiyoshi Kawabata, Yokohama, all of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed Nov. 16, 1981, Ser. No. 321,609
Claims priority, application Japan, Nov. 18, 1980, 55-162867
Int. Cl.³ H01G 4/12; C04B 35/46
U.S. Cl. 361—321 **7 Claims**



1. A porcelain composition for low temperature sintering consisting essentially of a component (X) of $Pb(Fe_{2/3}W_{1/3})O_3$, a component (Y) of $PbTiO_3$ and a component (Z) of $Pb(Yb_{1/2}Nb_{1/2})O_3$, with the sum of component (X), (Y) and (Z) being 100 Mole %, the proportions of the components (X), (Y) and (Z) being within the closed area of lines A-B-C-D-A in the triangular diagram of FIG. 1, with the values on the lines being excluded, and the points A to D having the following compositions in percents by mole:

	(X)	(Y)	(Z)
A	100	0	0
B	35	65	0
C	20	10	70

-continued

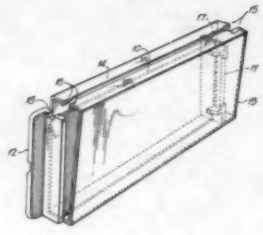
	(X)	(Y)	(Z)
D	30	0	70.

4,386,388

PRINTED CIRCUIT BOARD ASSEMBLY

Roger A. Beun, Dunrobin, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Sep. 4, 1981, Ser. No. 299,794
Int. Cl.³ H05K 5/04, 7/14
U.S. Cl. 361—399 2 Claims



1. In a printed circuit board assembly, comprising:
a printed circuit board for mounting electrical components thereon;
a pair of end plates affixed at opposed ends of the board;
a tubular protective cover supported at its ends by the pair of end plates in spaced relationship with respect to both sides of the board;
the improvement comprising:
the protective cover being formed from sheet metal and having an unfastened butt seam along its length;
each of the end plates having a notch on an edge facing the seam; and
the cover having inturned edges along the seam for engaging each notch so as to prevent separation of the seam.

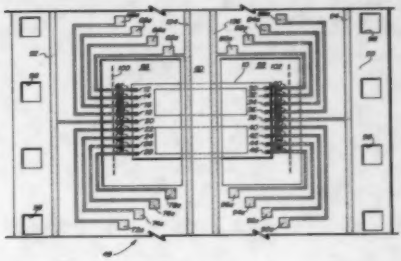
4,386,389

SINGLE LAYER BURN-IN TAPE FOR INTEGRATED CIRCUIT

Robert J. Proebsting, Dallas, Tex., assignor to Mostek Corporation, Carrollton, Tex.

PCT No. PCT/US80/01148, § 371 Date Sep. 8, 1980, § 102(e) Date Sep. 8, 1980, PCT Pub. No. WO82/00973, PCT Pub. Date Mar. 18, 1982
PCT Filed Sep. 8, 1980, Ser. No. 273,847
Int. Cl.³ H05K 1/18
U.S. Cl. 361—406 14 Claims

1. A tape for burning in an integrated circuit having at least three terminals for receiving signals which serve to exercise the circuit, comprising:
an elongate, nonconductive backing having a plurality of openings arranged longitudinally along said backing;
first and second conductors bonded to said backing and extending longitudinally thereon, said first conductor positioned between said openings and a first outer edge of said backing and said second conductor positioned between said openings and a second outer edge of said backing;
a third conductor bonded to said backing and extending longitudinally along said backing between the outboard edges of said openings; and
a conducting strip bonded to said backing for each of said conductors for each of said openings, said conducting strips connected to the corresponding conductor and



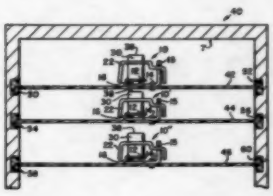
extending into said openings for respective contact to the terminals of said integrated circuit.

4,386,390

VIBRATION ADJUSTABLE SPACER

Robert J. Hammond, Stevensville, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jan. 21, 1981, Ser. No. 227,028
Int. Cl.³ H05K 1/14
U.S. Cl. 361—412 6 Claims



1. A vibration adjustable spacer for a printed circuit board placed between the board and an adjacent surface comprising:
a supporting member attached to the printed circuit board;
an extensible snubbing means extendible by vibration of the printed circuit board and capable of extension to the adjacent surface; and
means for locking said snubbing means in an extended position against said adjacent surface upon an acceleration of the circuit board in the opposite direction of said extending acceleration.

4,386,391

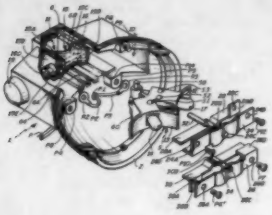
LUMINAIRE APPARATUS WITH MULTIPLE LIGHT SOURCES INCLUDING METHOD AND MEANS FOR SWITCHING AND ADJUSTING FOCUS OF THE LIGHT SOURCES

John E. Gulliksen, Shrewsbury; Roy A. Guimond, Holden, and Charles F. Daly, Boylston, all of Mass., assignors to Koehler Manufacturing Company, Marlborough, Mass.

Filed Jul. 28, 1980, Ser. No. 173,057
Int. Cl.³ F21V 1/00
U.S. Cl. 362—232 15 Claims

1. Luminaire apparatus of the class described comprising a housing having a reflector chamber which is closed at one side of the housing by a radiation transmitting member, an opposite side of the housing being extended to form a lamp socket enclosure part and a cable entry space, said lamp socket enclosure part having received therein dual rotary socket means and lamp elements therein, said socket means being resiliently

mounted in the lamp socket enclosure for sliding movement along the central axis of the reflector chamber and being rotatable about an axis extending at right angles to the said central axis.

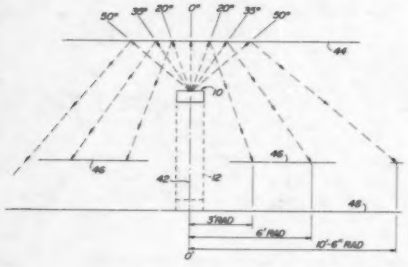


4,386,392

LIGHTING UNIT FOR PROVIDING INDIRECT LIGHT OF UNIFORM INTENSITY

Robert L. Reibling, Fort Thomas, Ky., assignor to Whiteway Manufacturing Co., Cincinnati, Ohio

Filed Nov. 17, 1980, Ser. No. 207,319
Int. Cl.³ F21V *7/09*
U.S. Cl. 362—297 **10 Claims**



1. A lighting unit for indirect illumination of a surface comprising a bowl-shaped symmetrical reflector, said reflector including first and second reflective surfaces contoured to direct generally upward, in a predetermined pattern, light rays emanating from a light source centrally disposed within said reflector, said first reflective surface being the lateral circumferential internal wall of said reflector and said second reflective surface being the lower wall of said reflector, said first reflective surface comprising an upper frustoconical portion, a lower frustoconical portion and an arcuate portion disposed intermediate the upper and lower portions, said second reflective surface being a convex frustoconical surface whereby the reflective surfaces generally direct the reflected light rays away from a vertical axis extending through the central axis of the lighting unit at predetermined angles for reflection by a surface spaced above the lighting unit to provide for substantially uniform intensity of light to the surface to be illuminated.

4,386,393

ADJUSTABLE FRICTIONAL DRAG LAMP SWIVEL

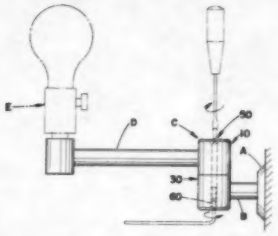
Louis D. Pike, Moreland Hills, Ohio, assignor to Pike Machine Products Company, Cleveland, Ohio

Filed Oct. 21, 1980, Ser. No. 199,252
Int. Cl.³ F21M *3/18*
U.S. Cl. 362—427 **15 Claims**

1. In an electrical fixture assembly having a base, a first tubular arm connected with the base and a swivel, a second tubular arm connected with the swivel, the second tubular arm being operatively connected with an electrical fixture, and a continuous length of electrical wire extending from the base, through the first tubular arm, the swivel, and the second tubular arm, to the electrical fixture; the swivel comprising:

a first member having a first side wall which accommodates a first axially extending cavity, the first member having a first engaging surface adjacent one end and a first end wall at an opposite end, the first side wall defining a first transverse bore therethrough, the first end wall defining a first axial bore which has a first bearing surface disposed thereabout;

a second member having a second side wall which accommodates a second axially extending cavity, the second member having a second engaging surface adjacent one end which slidingly engages the first engaging surface to permit relative rotational movement between the first and second members and having a second end wall at an opposite end, the second side wall having a second transverse bore therethrough, the second end wall defining an axially threaded bore;



a swivel pin extending through the first axial bore and the first and second cavities, the swivel pin having a head portion at one end with a second bearing surface for engaging the first bearing surface and a threaded portion at its other end for being received in the axially threaded bore, such that selective relative rotation between the swivel pin and the axially threaded bore causes a camming action which selectively adjusts the degree of frictional engagement between the first and second engaging surfaces and the first and second bearing surfaces;

the first and second tubular arms each being connected with one of the first and second transverse bores, whereby the wire passes through the first and second transverse bores and the first and second cavities of the swivel.

4,386,394

SINGLE PHASE AND THREE PHASE AC TO DC CONVERTERS

Mark J. Kocher, Scotch Plains, N.J., and Robert L. Steigerwald, Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 20, 1981, Ser. No. 264,750
Int. Cl.³ H02M *1/12, 7/23*
U.S. Cl. 363—20 **12 Claims**

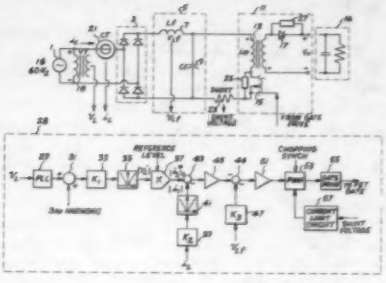
1. A three phase AC to DC converter supplied from a three phase AC power line and responsive to a desired DC output magnitude command comprising:

three pulse width modulated single phase AC to DC converters having their inputs connected in a delta configuration and connected to said three phase power line, said three pulse width modulated converters providing a single DC output, each of said single phase AC to DC converters comprising pulse width modulating means including means for generating a triangular wave signal, means responsive to a synchronizing signal for staggering said triangular wave in time relative to the triangular waves of the other converters, and means for generating pulse

width modulated pulses having a varying duty cycle to said converter, responsive to the desired output magnitude command;

means for generating synchronizing signals coupled to said single phase AC to DC converters to stagger the triangular wave signals of each of said single phase converters in time relative to one another, so that the pulses provided by each of said converters overlap; and

means for coupling an external load to said three single phase AC to DC converter output.

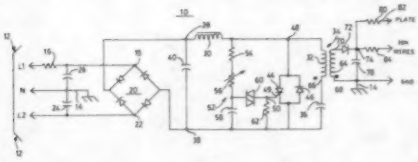


4,386,395

POWER SUPPLY FOR ELECTROSTATIC APPARATUS

Ralph M. Francis, Jr., Racine, Wis., assignor to Webster Electric Company, Inc., Racine, Wis.

Filed Dec. 19, 1980, Ser. No. 218,253
Int. Cl.³ H02M *3/315*
U.S. Cl. 363—27 **14 Claims**



1. A power supply circuit for apparatus comprising:

an input choke having one end connected to one side of a DC supply source connection;

a transformer;

a circuit loop connected between said second end of said input choke and a second side of said DC supply source connection, said circuit loop including the series connection of a capacitor, a switching device and a primary winding of said transformer, said switching device including a controlled conduction path and a control input for rendering said conduction path conductive, said capacitor being charged primarily by said DC supply source;

a resistive-capacitive trigger circuit connected between said DC supply source connections and said control input for repetitively rendering said switching device conductive at a predetermined repetitive rate so as to repetitively discharge said capacitor through said primary winding;

said transformer including a secondary winding and having a predetermined turns ratio between said secondary winding and said primary winding;

output circuit means for rectifying and filtering the output of said secondary winding to provide the output of said power supply circuit, said output circuit means comprising a diode rectifier having an anode connected to a first end of said secondary winding, said power supply output being provided between the cathode of said diode recitifier and the second end of said secondary winding, the discharge of said capacitor through said primary winding resulting in a positive voltage being developed across said primary winding referenced to a first end of said primary winding, said primary and secondary windings being wound and disposed relative to each other such that said first end of said primary winding is of opposite polarity with respect to said first end of said secondary winding, said power supply output being obtained from a recovery pulse in said primary winding of said transformer due to the inductive collapse of said transformer and occurring after said capacitor is discharged and subsequent to the occurrence of the signal across said primary winding that is in response to the discharge of said capacitor, said recovery pulse in said primary winding being of opposite polarity to said signal occurring in response to the discharge of said capacitor; and

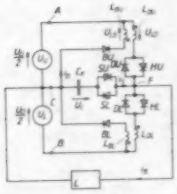
means for enhancing said recovery pulse and said power supply output, said recovery pulse enhancing means comprising a fast recovery diode being connected across said switching device and oppositely poled with respect to said switching device and said transformer including predetermined characteristics defining the coupling between said primary and secondary windings and the relative winding widths of said primary and secondary windings.

4,386,396

SELF-COMMUTATED INVERTER

Lennart Ängquist, Enköping, Sweden, assignor to ASEA Aktiebolag, Västeras, Sweden

Filed Dec. 8, 1981, Ser. No. 328,552
Claims priority, application Sweden, Dec. 23, 1980, 8009118
Int. Cl.³ H02M *7/515*
U.S. Cl. 363—136 **6 Claims**



1. A self-commutated inverter having:

terminals for connection to d.c. voltage source means,

two main branches connected in series with each other between two of said terminals, each main branch comprising first diode means, a main thyristor connected anti-parallel with the first diode means, and a commutating inductor connected in series with the main thyristor and the first diode means,

and turn-off circuit means connected between a point of connection between the two main branches and at least one of said terminals, the turn-off circuit means comprising commutating capacitor means and thyristor means, controllable in both directions, connected to said commutating capacitor means,

wherein one of said commutating inductors is provided with a first auxiliary winding which is connected, by way of second diode means, between, one of said terminals and one side of said commutating capacitor means providing a symmetrical commutation voltage on said capacitor means and delivering excessive commutation energy to said voltage source means.

4,386,397

METHOD AND APPARATUS FOR PROCESS CONTROL

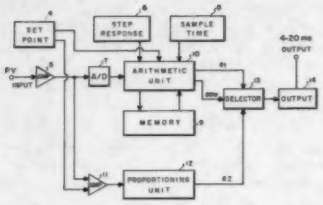
Michio Saeki, Yokohama, Japan, assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 12, 1980, Ser. No. 216,029

Claims priority, application Japan, Dec. 18, 1979, 54-163582; Dec. 27, 1979, 54-170920

Int. Cl.³ G05B *11/00, 13/02*

U.S. Cl. 364—148 **5 Claims**



1. A method of controlling a process, with which the process variable may quickly come to a process setpoint value at the beginning part of the process control or when the process setpoint value is changed, said method comprising the steps of memorizing measured values of the process variables; performing a deduction at an arbitrary time in the course of the control to deduct said memorized values from the approximated value of an assumed step response characteristic of the object to be controlled in response to the application of a manipulated variable thereto, thereby determining the estimated response value of the process variable after said arbitrary time; suspending the delivery of the manipulated variable to the object to be controlled at the time when the estimated operation indicates that the estimated response peak value will establish a predetermined relationship against the process setpoint value; retaining this suspended delivery of the manipulated variable for a calculated period which is necessary in order that the estimated peak value is actually achieved; and switching the control to a constant value control system when said period has elapsed, thereby the process control being performed without overshoot of the process setpoint value.

4,386,398

AUTOMATIC DOOR CONTROL APPARATUS

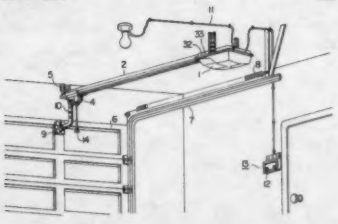
Shigeru Matsuoka; Takeshi Tokunaga; Seiji Yonekura; Koji Yamauchi, and Mitsuo Suzuki, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 27, 1981, Ser. No. 248,537

Claims priority, application Japan, Mar. 28, 1980, 55-38897; Mar. 28, 1980, 55-38898; Mar. 28, 1980, 55-38899

Int. Cl.³ E05F *15/10;* **H02H** *7/085*

U.S. Cl. 364—167 **12 Claims**



1. An automatic door operation control apparatus comprising:

(a) a door operating device coupled to a door for operating said door,

(b) driving means for driving said door operating device thereby to open and close said door,

(c) condition detector means for detecting a condition under which the movement of said door is required to be discontinued,

(d) a main control device for issuing a driving command to said driving means and controlling said driving means in response to a condition detection signal produced from said condition detector means, and

(e) an auxiliary control device including:

counting means set to a time longer than the maximum moving time of said door under normal conditions,

said counting means starting the counting operation substantially at the same time as the starting the driving of said driving means, and

a control circuit for discontinuing the operation of said driving means regardless of the driving command of said main control device in the case where a driving command continues to be applied to said driving means from said main control device after the lapse of said set time from the start of counting of said counter means.

4,386,399

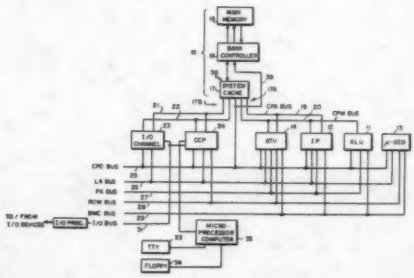
DATA PROCESSING SYSTEM

Edward Rasala, Westboro; Steven Wallach, Framingham; Carl J. Alsing, Hopkington; Kenneth D. Holberger, North Grafton; Charles J. Holland, Northboro; Thomas West, Boxboro; James M. Guyer, Marlboro; Richard W. Coyle, Dunstable; Michael L. Ziegler, Whitinsville, and Michael B. Druke, Chelmsford, all of Mass., assignors to Data General Corporation, Westboro, Mass.

Filed Apr. 25, 1980, Ser. No. 143,561

Int. Cl.³ G06F *9/36*

U.S. Cl. 364—200 **6 Claims**



1. A data processing system comprising central processor means including:

instruction processor means for decoding macro-instructions to produce a starting address of one or more micro-instructions;

micro-sequencing means responsive to said starting address for providing a sequence of one or more micro-instructions which include a plurality of microcontrol signals,

arithmetic logic means responsive to selected ones of said microcontrol signals for performing arithmetic or logical operations;

address translation means responsive to selected ones of said microcontrol signals for converting logical addresses into physical addresses;

memory means for storing information for use in said data processing system, said memory means including:

main memory means for storing said information;

temporary storage means for storing a selected portion of said information and having at least one set of input/output ports which includes one input/output port for han-

dling address information and another input/output port for handling data information;

controller means interconnected between said main memory means and said temporary storage means for controlling the transfer of information between said main memory means and said temporary storage means; and

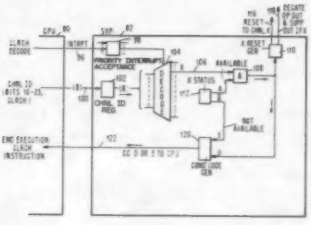
first means for interconnecting said at least one set of input-/output ports with said instruction processor means, said arithmetic logic means and said address translation means for transferring information therebetween.

4,386,400

RESET OF A SELECTED I/O CHANNEL AND ASSOCIATED PERIPHERAL EQUIPMENT BY MEANS INDEPENDENT OF THE CHANNEL

Bernard Cope, Wappingers Falls; Kenneth R. Lynch, Rhinebeck; Daniel H. O'Donnell, Woodstock; John T. Rodell, Wappingers Fall, all of N.Y.; William W. Turechek, Algonquin, Ill., and Robert M. Unterberger, Hopewell Junction, N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Continuation of Ser. No. 860,813, Dec. 15, 1977, abandoned.
This application May 19, 1980, Ser. No. 151,048
Int. Cl.³ G06F *9/06*
U.S. Cl. 364—200 **5 Claims**



1. In a data processing system having multiple I/O channels, ach channel having means responsive to a signal for being eset, each channel having an I/O interface for attachment of eripheral equipment, the peripheral equipment having means esponsive to a reset signal via said interface for being set, a eset control system comprising:

main processing means (**90**, FIG. **8**) responsive to an instruction of predetermined form (FIG. **7**) designating one of said channels to be reset; and

auxiliary processing means (**82**, FIG. **9**) operable independently of said channels and including means responsive to said command signal for applying a first reset signal (**83**, FIG. **6**; **116**, FIG. **9**) directly to the designated channel and for applying a second reset signal (**85**, FIG. **6**; **118**, FIG. **9**) directly to the I/O interface associated with said channel;

said first signal conditioning said channel to a reset state and said second signal being communicated via said interface to the peripheral equipment associated with said designated channel for conditioning said peripheral equipment to reset states.

4,386,401

HIGH SPEED PROCESSING RESTARTING APPARATUS

Steven M. O'Brien, Norristown, Pa., assignor to Sperry Corporation, New York, N.Y.

Filed Jul. 28, 1980, Ser. No. 172,619
Int. Cl.³ G06F *1/04, 13/00*
U.S. Cl. 364—200 **6 Claims**

1. In a high speed central processing unit, apparatus for synchronizing new clock signals with an asynchronous external ready signal, comprising:

a high speed central processing unit having a continuous running master clock for generating master clock signal,

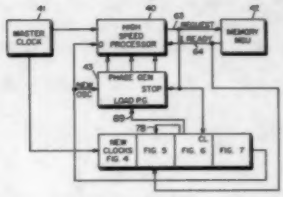
a memory unit having instructions stored therein,

means in said central processing unit for requesting an instruction in memory,

means in said memory for generating the set ready signal in response to a request for instruction,

a phase generator connected to said central processing unit for generating phase signals,

means in said central processing unit for generating a signal for stopping said phase generator after a request for an instruction is issued,



means connected to said master clock for generating a plurality of the new clock signals which are phase related to said master clock signal,

means responsive to said ready signal for sampling said new clock signals to determine which new clock signal will be synchronized with said asynchronous ready signal from said memory,

means for selecting one of said new clock signals synchronized with said ready signal, and

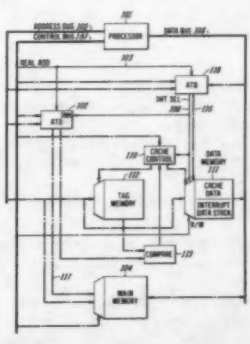
means for restarting said phase generator with said selected new clock signal.

4,386,402

COMPUTER WITH DUAL VAT BUFFERS FOR ACCESSING A COMMON MEMORY SHARED BY A CACHE AND A PROCESSOR INTERRUPT STACK

Wing N. Toy, Glen Ellyn, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 25, 1980, Ser. No. 190,611
Int. Cl.³ G06F *9/32, 9/46, 13/00*
U.S. Cl. 364—200 **11 Claims**



1. A computer system comprising:

a processor (**101**) generating and transmitting virtual address signals, mode control signals and read control signals;

main memory means (**104**);

buffer memory means (**110, 111, 112, 113**); and

address translation means (**102, 118**) responsive to said virtual address signals for generating real address signals for said main memory means and said buffer memory means;

characterized in that said buffer memory means comprises a

cache memory portion having a plurality of cache memory locations and an interrupt stack portion having a plurality of interrupt stack memory locations;

said address translation means is responsive to certain of said virtual address signals for generating real address signals of a first set for accessing said main memory and said cache memory portion and responsive to others of said virtual address signals for generating real address signals of a second set and a select signal; and

said buffer memory means is responsive to real address signals of said first set to selectively access said cache memory locations and responsive to real address signals of said second set and said select signal to access said interrupt stack locations.

4,386,403

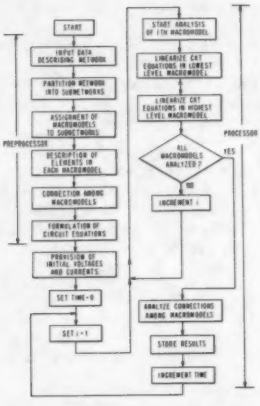
SYSTEM AND METHOD FOR LSI CIRCUIT ANALYSIS

Hsueh Y. Hsieh, Hopewell Junction, and Naguib B. G. Rabbat, Wappingers Falls, both of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Dec. 31, 1979, Ser. No. 108,911

Int. Cl.³ G06F *15/20*

U.S. Cl. 364—300 **9 Claims**



1. A system for performing a circuit analysis of a network, said system comprising:

input means for receiving circuit data providing information as to the topology and parameters of the network to be analyzed;

partitioning means for dividing said network into subnetworks;

macromodeling means for assigning to each of a plurality of said subnetworks a macromodel circuit having nodes and branches;

equation formulation means for providing for each of said macromodel circuits a respective set of circuit equations including specification of internal relationships and effects of external stimuli;

initialization means for providing the initial voltage and current conditions of a plurality of said nodes and branches of each of said macromodel circuits;

circuit analysis means for solving said sets of circuit equations for a predetermined instant in time; and

means for incrementing said time repeatedly and for activating said circuit analysis means after each increment for solving said sets of equations for each time increment.

4,386,404

RADIATION SIGNAL PROCESSING SYSTEM

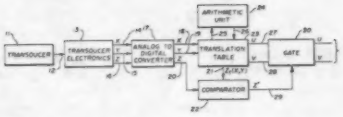
Glenn F. Knoll, Ann Arbor; Donald R. Strange, Howell, and Matthew C. Bennett, Jr., Ann Arbor, all of Mich., assignors to Medtronic, Inc., Minneapolis, Minn.

Continuation of Ser. No. 99,691, Dec. 3, 1979, Pat. No. 4,281,382, which is a continuation of Ser. No. 862,889, Dec. 21, 1977, Pat. No. 4,212,061. This application Jan. 12, 1981, Ser. No. 224,359

The portion of the term of this patent subsequent to Jul. 8, 1997, has been disclaimed.

Int. Cl.³ G06F *7/38*; G01T *1/20*

U.S. Cl. 364—414 **14 Claims**



1. A method of producing a corrected radiation image comprising the steps of:

presenting a calibration image of accurately known position to a radiation transducer;

deriving coordinate correction information by comparing the image location signals of the transducer to the known position of the calibration image;

storing said correction information;

detecting at least one event with the transducer;

deriving the true location of the event using said correction information and the apparent coordinates of said event, said step of deriving including a step of interpolating using said event coordinates; and

producing a corrected image using the derived true location of the event.

4,386,405

DEVICE FOR MEASURING THE LOCATION, THE ATTITUDE AND/OR A CHANGE OF LOCATION OR ATTITUDE OF THE LOWER JAW OF A PATIENT

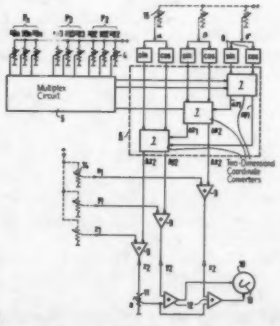
Arthur Lewin, Saxonwold, South Africa, and Bernd Nickel, Lorsch, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 3, 1980, Ser. No. 203,144

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1979, 2944489

Int. Cl.³ G06G *7/60*; A61B *5/05*

U.S. Cl. 364—415 **12 Claims**



1. A system for measuring the location, the attitude and/or a change of location or attitude of the lower jaw of a patient, said system comprising

a field generator mounted on the lower jaw,

field flux sensing means for mounting independently of the field generator and at an interval therefrom and for supplying signals in accordance with field flux from the field generator which define positional information comprising the location and attitude of the field generator relative to said field flux sensing means with respect to a stationary coordinate system (X, Y, Z),

an electronic device coupled with said field flux sensing means for obtaining and evaluating the signals from said field flux sensing means,

said field generator being located at a measuring point (P_1) on the lower jaw such that said electronic device supplies output coordinate signals representing the coordinates (x_1, y_1, z_1) of said measuring point (P_1) with respect to the stationary coordinate system (X, Y, Z), and supplies output angular signals (α, β, γ) representing the angular relationship of the lower jaw with respect to said field flux sensing means,

jaw attitude defining means operable for representing the geometrical attitude of the lower jaw relative to said measuring point (P_1) and defining a set of joints ($P_2 \ldots P_n$) on the lower jaw with respect to a fixed-body coordinate system (X_o, Y_o, Z_o) assigned to the lower jaw whose origin and center of rotation is said measuring point (P_1), and for supplying relative coordinate values ($x_{o2} \ldots x_{on}$, $y_{o2} \ldots y_{on}$, $z_{o2} \ldots z_{on}$) defining the positions of the respective points ($P_2 \ldots P_n$) of said set relative to said measuring point (P_1) in said fixed-body coordinate system (X_o, Y_o, Z_o) assigned to the lower jaw,

a coordinate converter coupled with said jaw attitude defining means for receiving relative coordinate value signals in accordance with the relative coordinate values ($x_{o2} \ldots x_{on}$, $y_{o2} \ldots y_{on}$, $z_{o2} \ldots z_{on}$) and for converting said relative coordinate value signals related to the lower jaw into adjustment coordinate values ($\Delta x_2 \ldots \Delta x_n$, $\Delta y_2 \ldots \Delta y_n$, $\Delta z_2 \ldots \Delta z_n$) for relating the locations of the respective points of said set to the stationary coordinate system, and

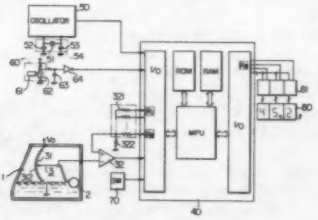
summing amplifiers (9) coupled with said electronic device and with said coordinate converter (6) for adding the adjustment coordinate values for the respective points ($P_2 \ldots P_n$) of said set to the output signals of said electronic device representing the coordinates (x_1, y_1, z_1) of said measuring point (P_1) with respect to said stationary coordinate system (X, Y, Z).

4,386,406

FUEL LEVEL MEASURING METHOD AND APPARATUS OF THE SAME

Osamu Igarashi, and Tomoji Inui, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 22, 1980, Ser. No. 171,267
Claims priority, application Japan, Aug. 1, 1979, 54-97341
Int. Cl.³ G01F 23/10
U.S. Cl. 364—442 **7 Claims**



4. A residual fuel measuring apparatus comprising

sensor means for sensing the fuel level of a fuel tank and for producing an output signal whose magnitude varies in a non-linear relationship with changes in the fuel level in said fuel tank;

converting means for converting the output signal from said sensor means into a signal representing the amount of residual fuel in said tank including means for storing characteristic values representing the relationship between the non-linear output of said sensor means and the amount of residual fuel in said tank; and

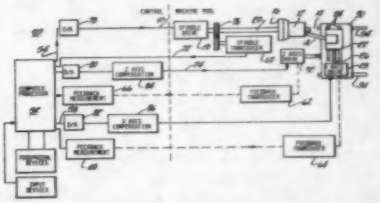
means for producing an indication of residual fuel on the basis of successive outputs from said sensor means during a predetermined period of time, including means for dividing the output signals from said sensor means into large values and small values during said predetermined period of time and obtaining a mean value between output signals of a given order of magnitude amongst the output signals of large value and small value received during said predetermined time period, and means for applying said mean value to said converting means.

4,386,407

LATHE CONTROL SYSTEM

William R. Hungerford, Detroit, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Aug. 11, 1980, Ser. No. 176,891
Int. Cl.³ G05B 13/00
U.S. Cl. 364—474 **5 Claims**



1. A control system for a lathe of the type having a spindle adapted to rotate a workpiece about the spindle rotational axis and further having a tool movably situated relative to the workpiece, the system comprising:

command means including processor means for accelerating the tool to a predetermined target velocity and position and for achieving said target velocity and position when said workpiece has rotated to a target reference angle; for bringing the tool into contact with said rotating workpiece at said target or reference position, for maintaining said tool and contacting engagement with said workpiece at a determinable radius from said spindle axis and for retracting said tool from said workpiece after a determinable interval;

said command means further synchronized with the rotational motion of said workpiece and responsive to input data and the motion of said spindle for generating a command signal to cause said tool to accelerate to said target velocity at said target position;

drive means for moving said tool relative to the workpiece;

compensating means to cause said slide means to follow a compensated command signal with zero following error, wherein said compensating means comprises;

means for generating a first signal indicative of the position of said workpiece;

means included in said processor means for generating an error signal comprising the difference between said command signal and said first signal;

filter means including proportional and integral controller for conditioning said error signal and for generating a second signal indicative of the conditioned error signal;

feedback transducer means for generating a signal indicative of the speed of the slide;

drive amplifier means having inverting and non-inverting input terminals adapted to receive at the non-inverting terminal said second signal and to receive at the invert-

ing terminal the signal generated from said feedback transducer means for generating said compensated command signal to control said slide means with zero following error.

4,386,408

TRACER CONTROL SYSTEM

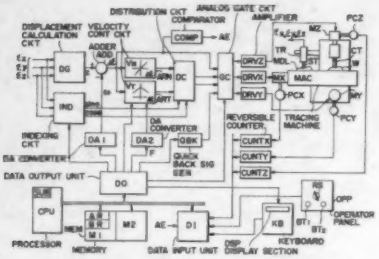
Ryoji Imazeki; Etsuo Yamazaki; Takao Sasaki, all of Hachioji, and Masashi Yamaguchi, Hino, all of Japan, assignors to Fujitsu Fanuc Ltd., Tokyo, Japan

Filed Oct. 8, 1980, Ser. No. 195,077

Claims priority, application Japan, Oct. 11, 1979, 54-131097

Int. Cl.³ G06F *15/46;* **G05B** *19/19*

U.S. Cl. 364—474 **11 Claims**



1. A tracer control system which detects the surface configuration of a model by controlling the relative motion of a tracer head for a selected tracing in a selected mode over the model surface, each said selected tracing comprising at least one trace path along a respective selected direction and respective starting and terminating ends, and to provide a quick return with a predetermined minimum clearance in preparation for the next selected tracing, said control being effected by signals including displacement signals from said tracer head, and input data at least part of which is stored in a memory of said system for defining each said selected tracing said system comprising:

means for detecting during each said selected tracing the current position of the tracer head relative to said model in a selected direction corresponding to which said predetermined clearance is to be provided;

memory means for storing at least one coordinate value corresponding to the maximum value of said detected tracer head position in said selected direction for each said selected tracing; and

means for quickly returning the tracer head from the terminating end of a completed selected tracing to the starting end of the next selected tracing, including for first moving the tracer head to a position corresponding to the sum of said maximum value for the completed selected tracing and a predetermined constant value corresponding to said predetermined minimum clearance, followed by said quick return of said tracer head over at least the last trace path of each said selected tracing,

wherein the tracer head clears said model by at least said predetermined constant value over at least said last trace path during the quick return.

4,386,409

SEWAGE FLOW MONITORING SYSTEM

Alan M. Petroff, PH-2 Marbella del Caribe, Este, Isla Vorde, P.R. 00914

Filed Sep. 23, 1980, Ser. No. 190,036

Int. Cl.³ G01F *23/28*

U.S. Cl. 364—510 **8 Claims**

1. A flow monitoring system comprising:

ultrasonic transducer means positionable in the top region of a sewer pipe for transmitting and receiving acoustic energy along a generally vertical path;

signal means coupled to said transducer means and responsive to an input control signal for energizing said transducer means in repetitive bursts of a selected duration of ultrasonic frequency signals to thereby produce bursts of ultrasonic acoustic energy which move downward in a said pipe;

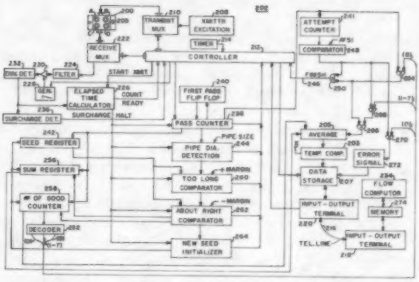
control means for providing system control signals including said control signal to said transducer means;

receiver means comprising:

filter means coupled to receive signals received by said transducer means and for passing signals corresponding to signal energy proximate to the frequency of the transmitted ultrasonic signals, and

envelope detection means responsive to the output of said filter means for providing a burst contour signal;

signal timing means responsive to said envelope detection means and a signal from said signal means corresponding in time to a transmitted signal burst from said transducer



means for providing an output signal varying as a function of the period between the transmission of a signal burst and the reception of a signal burst, and for providing an output representative of the distance between said transducer means and the surface of a fluid flowing through said pipe;

comparator means for comparing a series of outputs from said timing means, each being a sample representative of a said distance, with the preselected values and for providing signal outputs in a form of discrete timing signal samples which are of a distance value no greater than a distance equal to the diameter of said pipe and do not represent a sample, representative of a said distance, which differs in value from another of the series of samples by more than selected differences;

averaging means responsive to the output of said comparator means for averaging signal samples from said comparator means, and thereby providing the average distance as reflected by said series of samples; and

computation means responsive to said averaging means for computing flow through said pipe.

4,386,410

DISPLAY CONTROLLER FOR MULTIPLE SCROLLING REGIONS

Yogendra C. Pandya, and Paul B. Wood, both of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 23, 1981, Ser. No. 237,318

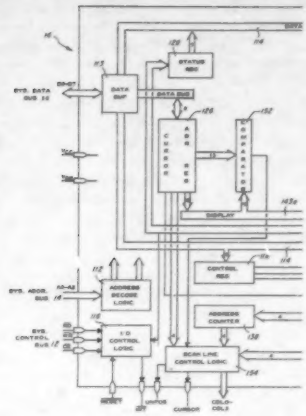
Int. Cl.³ G06F *3/14*

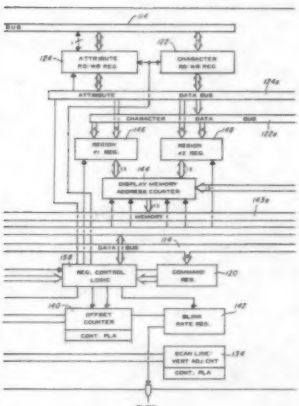
U.S. Cl. 364—518 **3 Claims**

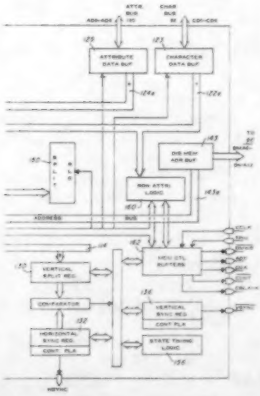
1. In a display control system having character memory means, visual attribute generator means, a display device and a display memory, a display controller device comprising:

means for loading character and visual attribute data into selected display memory locations from a data bus, wherein said character data is stored in said character

memory means and said attribute data is generated by said visual attribute generator means, and wherein a plurality







of character and attribute data bytes form a block of data in the display memory corresponding to a row of characters as seen on the display device;

means for assigning two or more memory location identifier bytes to each displayed row of characters corresponding to and stored adjacent said data blocks in the display memory, wherein when vertical split regions are next to be displayed each of said identifier bytes includes the display memory address of the first character in the next row of characters in a corresponding one of said vertical split regions to be displayed on the display device;

means for storing a data byte corresponding to a preselected column on said display device wherein a vertical split region will begin;

second means for storing a data byte corresponding to the starting address of a character row;

third means for storing a data byte corresponding to the starting row address of a vertical split region; and

means for determining which scan line of a character a particular display memory address corresponds to, whereby a plurality of rows of characters appearing on the display device are scrolled one scan line at a time.

4,386,411

RANDOM PATTERN GENERATOR

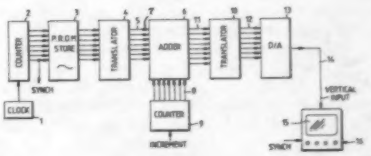
Robert J. Risk, Malvern Link, and Ian A. Shanks, Malvern, both of England, assignors to National Research Development Corporation, London, England

Filed Dec. 30, 1980, Ser. No. 221,268

Claims priority, application United Kingdom, Jan. 8, 1980, 8000520

Int. Cl.³ G06F *15/20, 3/14*

U.S. Cl. 364—521 **14 Claims**



1. A random pattern generator for producing a pattern trace comprising means for generating a series of numbers X_i each representing amplitude values of a waveform X, means for translating each value of X_i into a number Y in a series of numbers Z, means for incrementing by a changeable amount each value of Y to obtain a different number Z_i in the Z series, so that as the amount of incrementing is changed the pattern trace changes to a different pattern and means for using the successive values of Z_i as said pattern trace.

4,386,412

CALCULATOR WITH EQUATION DISPLAY DEVICE

Hisashi Ito, Tanashi, Japan, assignor to Casio Computer Company, Ltd., Tokyo, Japan

Filed Dec. 9, 1980, Ser. No. 214,719

Claims priority, application Japan, Dec. 17, 1979, 54-162715; Apr. 30, 1980, 55-56195; Apr. 30, 1980, 55-56197

Int. Cl.³ G06F *7/38*

U.S. Cl. 364—710 **21 Claims**

1. An equation display device for a calcuator, comprising:

a key input section including at least numerical entry keys and function keys of +, −, ×, ÷, etc., for inputting numeral data and function data according to a calculation equation;

a memory coupled to said key input section for storing the numeral data and function data inputted from said key input section;

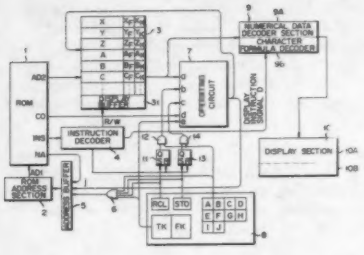
calculating means coupled to said memory for performing a

calculation, according to the calculation equation, based on the data stored in said memory;

a display section coupled to said calculating means for displaying a result of calculation outputted from said calculating means;

input control means coupled to said memory for judging the data inputted by the operation of said numerical entry keys and said function keys of said key input section and for performing a key input processing;

character equation preparing means coupled to, and controlled by, said input control means for treating the data inputted by said key operation according to the calculation equation such that each numeral data is replaced by respective character data in the order of inputting of the numeral data, and for preparing display data so that the inputted calculation equation is displayed in the form of a character equation;



a display register coupled to said character equation preparing means for sequentially storing the character equation display data prepared by said character equation preparing means; and

display control means coupled to said display register and responsive to said character equation display data outputted from said display register for displaying the character equation on said display section.

4,386,413

METHOD AND APPARATUS OF PROVIDING A RESULT OF A NUMERICAL CALCULATION WITH THE NUMBER OF EXACT SIGNIFICANT FIGURES

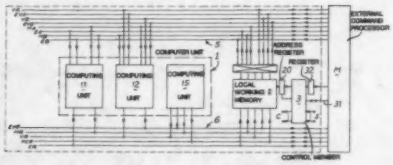
Jean P. Vignes, Rueil-Malmaison, and Vincent Ung, La Varenne, both of France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), France

Filed Apr. 22, 1980, Ser. No. 142,738

Claims priority, application France, Apr. 23, 1979, 79 10244

Int. Cl.³ G06F *7/38*

U.S. Cl. 364—748 **9 Claims**



1. A method of providing, by means of a digital computer device, the result of a calculation performed upon digital data having a floating point representation on a numberation base with the number of exact significant figures in this result, the digital data including pieces of initial data with each piece of initial data including a mantissa, the method comprising the steps of:

associating with the mantissa of each piece of initial data an item of error information having a floating point representation, which has a value of zero when the real value of the piece of initial data and the value thereof in the digital representation employed for the calculation coincide and which does not have a value of zero when the real value of the piece of initial data and the value thereof in the digital representation employed for the calculation do not coincide;

carrying out a first arithmetical operation upon first pieces of initial data by employing the digital representation and the item of error information of the mantissa of each of the first pieces of initial data in order to first calculate a mean value of the mantissa of the result and to secondly calculate an item of error information associated with said mean value of the mantissa of the result;

calculating each of other possible arithmetical operations of the calculation by employing, in case of need, as a non-initial piece of data, a result of a preceding operation, the mean value and the item of error information of the mantissa of this non-initial piece of data being the calculated mean value and the calculated error information of the mantissa of the result of the preceding operation, whereby a final result of the calculation is obtained; and

determining the number of exact significant figures in the final result of the preceding step from the calculated values of the mean value and of the error information of the mantissa of said final result.

4,386,414

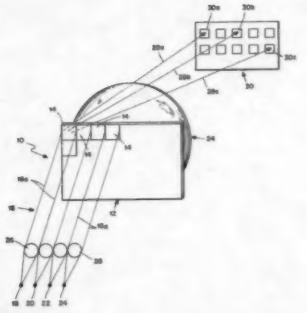
DATA PROCESSING SYSTEM UTILIZING A HOLOGRAPHIC OPTICAL ELEMENT

Steven K. Case, St. Louis Park, Minn., assignor to The Regents of the University of Minnesota, Minneapolis, Minn.

Filed Nov. 19, 1980, Ser. No. 208,178

Int. Cl.³ G06G *9/00*; G06F *7/56*

U.S. Cl. 364—826 **11 Claims**



1. In a data processing system, a holographic optical element formed with a plurality of adjoining facets, each facet containing grating patterns representing encoded mathematical data for diffractively redistributing input light so that output light from each facet represents said mathematical data.

4,386,415

COMPARE LOGIC CIRCUIT FOR TRAIN PRINTER-DATA LINK PROCESSOR

David P. Chadra, Anaheim, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed May 7, 1980, Ser. No. 148,161

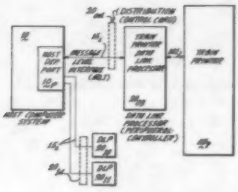
Int. Cl.³ G06F *3/12*

U.S. Cl. 364—900 **10 Claims**

1. In a peripheral-controller, designated as a data link processor, for providing I/O functions to a main host computer and for controlling print-out to a peripheral train printer mechanism having a print hammer for each column in a line of print

and print hammers activatable to strike against a character slug on a train-block, and wherein said peripheral-controller provides a RAM buffer memory having a first dedicated area (PIB) to store codes representing data characters to be printed and a second dedicated area (TIB) to store codes representing characters on rotating train blocks in said peripheral train printer mechanism and a third dedicated area for storing codes of control characters and result messages to be conveyed to said main host computer, the combination comprising:

(11a) means at each addressable location in said RAM buffer memory, to store two sets of character codes respectively designated as the top-half character (AB) and the bottom-half character (CD);



(11b) means to alternately address coded characters in said first dedicated area (PIB) and said second dedicated area (TIB) and to provide a first and second predetermined sequence of output signals to a compare logic means, and wherein, said second predetermined sequence of output signals represents coded characters of said rotating train block when the corresponding character slug is positioned opposite a columnar print hammer;

(11c) compare logic means to compare the said first and second output signals to sense when a match is accomplished and to send an activating signal to said train printer mechanism to actuate a particular columnar print hammer.

4,386,416

DATA COMPRESSION, ENCRYPTION, AND IN-LINE TRANSMISSION SYSTEM

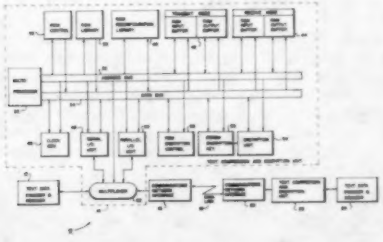
Michael E. Giltner, Plano; Jack C. Mueller, and Robert R. Fiest, both of Carrollton, all of Tex., assignors to Mostek Corporation, Carrollton, Tex.

PCT No. PCT/US80/00686, § 371 Date Jun. 2, 1980, § 102(e) Date Jun. 2, 1980, PCT Pub. No. WO81/03560, PCT Pub. Date Dec. 10, 1981

PCT Filed Jun. 2, 1980, Ser. No. 261,123

Int. Cl.³ G06F *5/00*

U.S. Cl. 364—900 **42 Claims**



1. A system for compressing data by reducing the number of binary bits required to represent the data comprising:

memory means for storing each of a plurality of selected units of a set of units in unit positions to form a library, each unit position having a memory address expressed in bits,

processing means for detecting each unit in the data and searching the memory to determine if the respective unit in the data is in the library, and alternatively compiling data representative of the units which are not stored in the memory library or the addresses of the units which are stored in the memory library together with a code indicating which alternative is compiled in each instance.

4,386,417

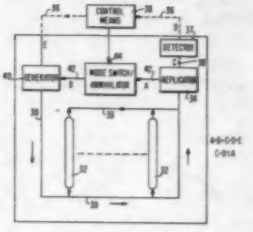
HIGH PERFORMANCE BUBBLE CHIP ARCHITECTURE

Thomas W. Collins, Saratoga, and Michael G. Hurley, Cupertino, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1981, Ser. No. 280,024

Int. Cl.³ G11C *19/08*

U.S. Cl. 365—12 **6 Claims**



1. A major/minor loop bubble memory system comprising:

a bubble chip having a major loop write channel with a merge point positioned therein and a major loop read channel with a detector positioned therein,

a signal path off said chip from said detector to said merge point,

a replicator positioned in said read channel, said replicator having first and second output paths with an equal number of propagation steps, said first path going to said merge point, said second path passing via said read channel to said detector and then to said signal path and then to said merge point in said write channel,

a mode switch-annihilator means positioned in said first path, and

decision-making means positioned in said signal path, said decision making means spaced from said replicator by up to and including the same number of propagation steps as said mode switch-annihilator means is spaced from said replicator wherein said decision-making means is activated to cause the replicated data to pass through the mode switch-annihilator means into said write channel or to be annihilated in the mode switch-annihilator means.

4,386,418

CONDUCTORLESS SWAP GATE FOR ION-IMPLANTED CONTIGUOUS-DISK BUBBLE DEVICES

Kochan Ju, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 28, 1981, Ser. No. 335,042

Int. Cl.³ G11C *19/08*

U.S. Cl. 365—36 **9 Claims**

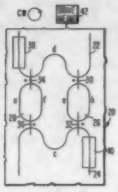
1. The combination for providing a conductorless swap gate for ion-implanted contiguous-disk bubble devices comprising

a major loop,

a minor loop having a folded end portion facing said major loop, said end portion having a first region and a second region separated by a third region,

a swap gate comprising at least one element positioned between said major loop and said minor loop, said swap gate having a first portion associated with said major loop, said swap gate having a second portion associated with

said minor loop first region, said swap gate having a third portion associated with said minor loop second region, and



means for reversing the rotation of the rotating magnetic field wherein activation of said means causes the swap function to be effected.

4,386,419

MEMORY DEVICE WITH VARIABLE LOAD

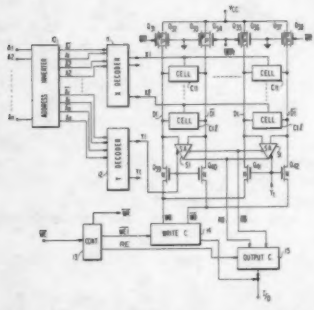
Toru Yamamoto, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Feb. 26, 1980, Ser. No. 124,669

Claims priority, application Japan, Feb. 26, 1979, 54-21687

Int. Cl.³ G11C *11/40, 7/00*

U.S. Cl. 365—203 **21 Claims**



9. A static memory device in which a logic information to be written into a selected memory cell and a logic information readout from another selected memory cell are transferred through a digit line, comprising load means arranged between said digit lines and a predetermined potential and control means for making resistivity of said load means smaller in a transient period from a write cycle to a read cycle than it is in the write cycle and in the read cycle and in a transient period from a read cycle to a read cycle.

4,386,420

DYNAMIC READ REFERENCE VOLTAGE GENERATOR

Warren R. Ong, Cupertino, Calif., assignor to Fairchild Camera and Instrument Corp., Mountain View, Calif.

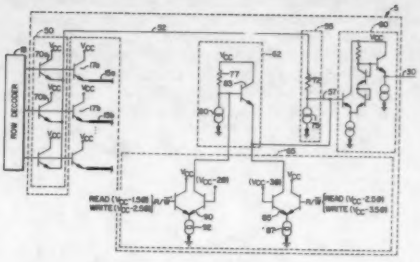
Filed Oct. 19, 1981, Ser. No. 313,001

Int. Cl.³ G11C *7/00*

U.S. Cl. 365—208 **21 Claims**

1. In circuitry for reading the contents of a selected memory cell within a column of memory cells, each said memory cell having an associated word line, said memory cells having a common bit line with associated sensing circuitry, selection of a given memory cell occurring by the provision of an active level on the word line corresponding to said given memory cell, the improvement comprising:

means operatively coupled to said word lines for providing a voltage representative of the most active voltage on said word lines; and



means for communicating a voltage derived from said most active voltage to said sensing circuitry to provide a reference voltage therefor.

4,386,421

MEMORY DEVICE

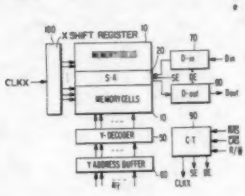
Yasaburo Inagaki, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Sep. 5, 1980, Ser. No. 184,446

Claims priority, application Japan, Sep. 7, 1979, 54/115021

Int. Cl.³ G11C *13/00*

U.S. Cl. 365—230 **6 Claims**



1. A memory device comprising a memory cell matrix including a plurality of memory cells arranged in rows and columns, a plurality of sense amplifiers associated with said columns, means for selecting one of said rows, means for operatively enabling said sense amplifiers thereby to refresh the contents of the memory cells associated with the selected rows, a shift register having a plurality of output terminals, a plurality of column drive transistors each having a control terminal coupled to an associated one of said output terminals of said shift register, a first terminal adapted to receive a column drive pulse and a second terminal from which a column drive signal for an associated one of said columns is derived, a plurality of initializing transistors, one of said initializing transistors being coupled between one of said output terminals and a power voltage terminal, the remainder of said initializing transistors being coupled between the remainder of said output terminals of said shift register and a reference voltage terminal, means for supplying gates of said initializing transistors with an initializing pulse in common, and control means for controlling shift operation of said shift register.

4,386,422

SERVO VALVE FOR WELL-LOGGING TELEMETRY

Edward S. Mumby, Sacramento, Calif., and John D. Jeter, Iowa Park, Tex., assignors to Exploration Logging, Inc., Sacramento, Calif.

Filed Sep. 25, 1980, Ser. No. 190,626

Int. Cl.³ G01V *1/40*

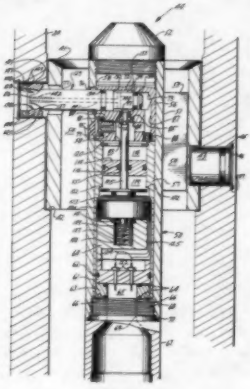
U.S. Cl. 367—85 **20 Claims**

1. A valve assembly for a drilling-fluid telemetry system for

sending information to the surface from a borehole drilled in the earth, the assembly being adapted for mounting in an elongated and generally vertical drill string extending from a surface end into the borehole to a lower end having a flow restriction, the drill string being hollow so drilling fluid pumped therethrough from the surface flows past the restriction and then returns to the surface through an annulus between the drill string and the borehole wall, comprising:

an outer housing adapted for inserting in the drill string between the surface and the restriction so drilling fluid can be pumped therethrough, the outer housing having an orifice extending laterally therethrough and defining a valve seat;

an inner housing supported within the outer housing, the housings having a space therebetween through which drilling-fluid circulation to the restriction can be maintained;



an elongated valve closure member mounted on and extendible from the inner housing into the space between the housings toward the valve seat to be movable between open and closed positions, the closure member having an outer portion urged against the valve seat to block the orifice in the closed position, and the outer portion being spaced from the seat in the open position to enable flow of drilling fluid through the orifice to the annulus, the closure member having an axis of linear movement which is lateral to the longitudinal axis of the drill string;

actuating means in the inner housing for moving the closure member from the closed position to the open position, and then back to the closed position to generate a negative pressure pulse in the drilling fluid which can be detected at the surface.

4,386,423

ELECTRONIC TIMEPIECE HAVING MULTI-FUNCTIONS

Seiko Sasaki, and Kazuhiro Asano, both of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

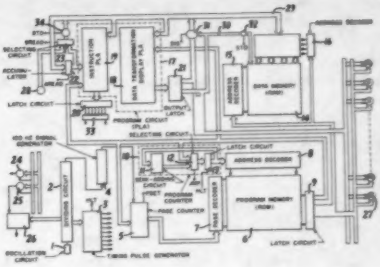
Filed Jun. 18, 1979, Ser. No. 49,477

Claims priority, application Japan, Jun. 23, 1978, 53-76008

Int. Cl.³ G04B *23/02*; G04F *5/00*

U.S. Cl. 368—73 **4 Claims**

1. An electronic timepiece having multi-functions comprising in combination: a quartz oscillation circuit for generating a time standard signal; a dividing circuit for dividing an output of said quartz oscillation circuit and including means for generating a 100 Hz signal; a timing pulse generating circuit for generating timing pulse signals as input signals for operating circuit blocks; a ROM-circuit comprising a program memory for executing multi-function operations of the timepiece; an instruction PLA for generating instruction data and connected to receive the output of said ROM-circuit; a program counter and page counter for renewing the address and page of said ROM-circuit, the address and page of said program and page counters being jumped by the output of said instruction PLA; a RAM-circuit comprising a data-memory for memorizing data including a controlling memory, operated results and time information and being addressed by a plurality of decoders which are controlled directly by the output of said ROM-circuit; an operation circuit for executing operations including data comparison and data transformation; a latch circuit comprising an output data memory circuit for temporarily memorizing display data and other output data; a driver circuit for displaying at least part of the contents of said latch circuit; an alarm sound combining circuit in which a part of the output signal of said dividing circuit is applied thereto; and means for synchronously driving at least a part of the address of said program by the output of said dividing circuit.



4,386,424

BROAD BAND TELECOMMUNICATION SYSTEM

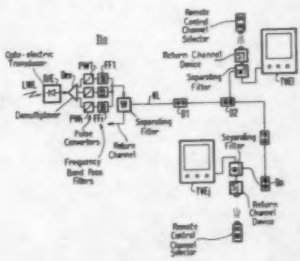
Hans-Martin Christiansen, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 4, 1980, Ser. No. 203,981

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1979, 2951495

Int. Cl.³ H04B *9/00*; H04J *1/00*

U.S. Cl. 370—4 **6 Claims**



1. A broadband telecommunication system, comprising:

a light waveguide lying between a central transmission location and a receiving location subscriber terminal, and carrying a plurality of time-division multiplexed signals in individual time channels pulse-modulated at the transmission location corresponding to a plurality of video signals;

means for converting the pulse-modulated video signals in the individual time channels into PAM signals connected to frequency band pass filter means transmissive for a frequency band from a sequence of frequency bands forming a frequency spectrum of the PAM signal;

output signals of said frequency band pass filter means being connected to a distribution line connecting to video receiver means at the subscriber terminal;

the video signals being transmitted in time channels corresponding to said video receiver means operated at the subscriber terminal; and

said means for converting providing said PAM signals such that multiples of a clock frequency of the PAM signals lie at least approximately at band limits of a plurality of television channels on which said video receiver means is operable, said PAM signals being supplied to said frequency band pass filter means whose output signals proceed to said subscriber distribution line and video receiver means operated at the subscriber terminal.

4,386,425

SWITCHING UNIT FOR THE TRANSFER OF DIGITIZED SIGNALS IN PCM SYSTEM

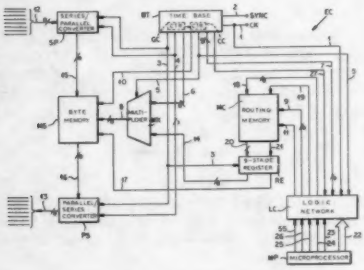
Piero Belforte; Bruno Bostica, and Luciano Pilati, all of Turin, Italy, assignors to Cselt - Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed May 12, 1981, Ser. No. 262,933

Claims priority, application Italy, May 13, 1980, 67745 A/80

Int. Cl.³ H04Q *11/04*

U.S. Cl. 370—66 **9 Claims**



1. A switching unit for the selective transfer of binary code words from a plurality of incoming signal paths, arriving simultaneously during individual time slots of a recurrent frame period assigned to respective communication channels, to a like plurality of outgoing signal paths under the control of instructions from an associated command unit, comprising:

first memory means having cells for the temporary storage of all the code words arriving during one frame period over all said incoming signal paths, said first memory means being provided with loading means connectable to said incoming signal paths for inscribing arriving code words in said cells and with unloading means connectable to said outgoing signal paths for reading out code words inscribed in said cells;

timing means for controlling said loading means to fill said cells in a predetermined order with arriving code words during each frame period in at least one writing phase per time slot;

second memory means for the storage of routing information identifying the cells of said first memory means whose contents are to be consecutively read out to respective outgoing signal paths by said unloading means during a frame period in at least one reading phase per time slot, said second memory means being provided with input means for receiving said routing information in a writing phase and with output means controlled by said timing means for delivering said routing information to an address input of said first memory means during successive reading phases; and

decoding means connected to said input means for enabling the transmission of said routing information to said second memory means during a writing phase in response to instructions from said command unit, said decoding means including circuitry responsive to certain of said instructions for supplementing said routing information with an inhibiting bit transmissible by said output means and said address input to a corresponding cell of said first memory means for blocking the transfer of the contents thereof to any of said outgoing signal paths.

4,386,426

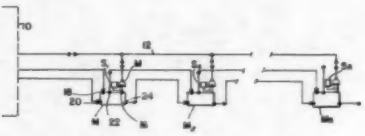
DATA TRANSMISSION SYSTEM

Charles D. Pugh, Burlington, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Nov. 3, 1980, Ser. No. 203,151

Int. Cl.³ H04J *3/16*

U.S. Cl. 370—85 **16 Claims**



1. A data transmission system for multiplexing data between a master station and a plurality of separate data sources comprising:

a master station for transmitting clock and reset signals and for receiving data signals;

a common data bus;

a plurality of separate module means each connected to said master station in parallel by said common data bus and in series with each other and said master station for receiving said clock and reset signals, and in response thereto, for sequentially transmitting data onto said common data bus and for enabling the actuation of at least one downstream module following the completion of data transmission; each of said modules including:

data transmission means for transmitting data onto said common data bus;

first means for receiving a first reset signal and resetting said module in response thereto, for receiving a first clock signal from said master station and in response thereto actuating said data transmission means and enabling the next successive module, and for receiving a second clock signal from said master station following the transmission of data and in response thereto deactuating said data transmitting means; and

second means for transmitting subsequent clock signals from said master station to the succeeding module following said second clock signal; and

said system further including resetting means for resetting said system.

4,386,427

FAIL-SAFE DEVICE IN AN ELECTRONIC CONTROL SYSTEM FOR AN AUTOMOTIVE VEHICLE

Akio Hosaka, Yokohama, Japan, assignor to Nissan Motor Company, Ltd., Kanagawa, Japan

Filed Mar. 23, 1981, Ser. No. 246,893

Claims priority, application Japan, Mar. 24, 1980, 55-36258

Int. Cl.³ G06F *11/30*

U.S. Cl. 371—11 **13 Claims**

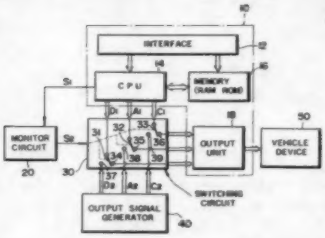
1. A fail-safe device in an electronic control system for an automotive vehicle comprising:

a microcomputer having a central processing unit and an output unit, and adapted to normally periodically executing a program, said microcomputer including an output means for generating control signals and a program run signal in response to the microcomputer executing the

program, the program run signal having a predetermined periodically occurring characteristic only while the microcomputer normally periodically executes said program;

a monitor circuit connected to said output means for receiving said program run signal in order to detect the failure of the microcomputer operation and for generating a command signal when the predetermined periodic characteristic of said program run signal does not occur for a time interval in excess of a predetermined interval greater than the period of the predetermined periodic characteristic;

an output signal generator means for outputting preset control signals which are fixed and nonprogrammably determined during operation of said vehicle, said preset control signals corresponding to said control signals, and said



output signal generator means including a memory unit for storing said preset control signals; and

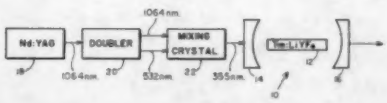
a switching circuit associated with said output unit of the microcomputer for selectively feeding said control signals and said preset control signals to said output unit, said switching circuit responsive to said command signal for changing the position thereof between a first position connecting said output means with said output unit for feeding said control signals to said output unit and a second position connecting said output signal generator means with said output unit for feeding said preset control signals to said output unit, said switching circuit being maintained in said first position in said microcomputer normal state and changed to said second position in response to said command signal indicative of microcomputer failure.

4,386,428

TRIPLED ND:YAG PUMPED TM^{3+} LASER OSCILLATOR

James W. Baer, Nashua, N.H., assignor to Sanders Associates,

Filed Oct. 14, 1980, Ser. No. 196,246
Int. Cl.³ H01S 3/14
U.S. Cl. 372—41 **4 Claims**



1. A downconverter laser oscillator, comprising:

a resonant cavity;

means for extracting energy from said cavity;

a Tm:$LiYF_4$ crystal disposed within said resonant cavity; and

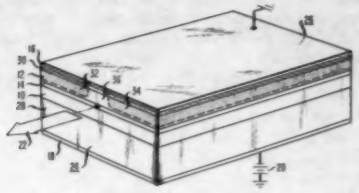
a tripled Nd:YAG laser for pumping said Tm:$LiYF_4$ crystal with coherent radiation at 355 nanometers.

4,386,429

ALGAAS-ALGAASSB LIGHT EMITTING DIODES

Philip J. Anthony, Bridgewater, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 23, 1980, Ser. No. 219,509
Int. Cl.³ H01S 3/19
U.S. Cl. 372—45 **13 Claims**



1. In a light emitting diode, a semiconductor body comprising

first and second $Al_xGa_{1-x}As$ semiconductor cladding layers of opposite conductivity type, and

an intermediate semiconductor region between and contiguous with said cladding layers,

said intermediate region including a narrower bandgap $Al_yGa_{1-z}As_{1-y}Sb_y$ active layer capable of emitting radiation when said cladding layers are forward biased and pumping current is applied thereto,

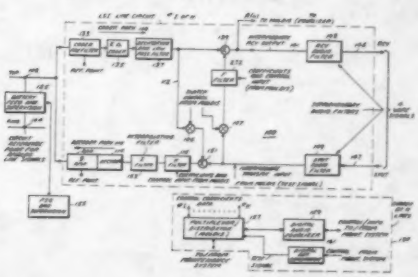
the amount y of Sb in said active layer being mutually adapted with the thicknesses of said layers and said region so as to place said active layer under compression at the operating temperature of said diode.

4,386,430

AUTOMATIC EQUALIZER FOR SYNTHESIZING RECURSIVE FILTERS

Robert Treiber, Fairfield, Conn., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Oct. 23, 1980, Ser. No. 199,906
Int. Cl.³ H04L 25/03; H04B 3/14
U.S. Cl. 375—14 **14 Claims**



1. A digital recursive automatic equalizer for minimizing the variance between a digital input signal and a reference to provide signal equalization for telecommunication transmission on a full duplex transmission line, comprising:

means for computing an output representative of the partial derivatives of the means square error signal with respect to a series of recursive filter coefficients;

means responsive to said computed output for adaptively changing said coefficients in accordance with the value of the error between said digital input signal and said reference to cause said series of recursive filter coefficients to

rapidly converge into a series of updated filter coefficients;

memory means for storing recursive filter coefficients and intermediate value representative of coefficient value changes from one coefficient update to another;

means for transferring said updated filter coefficients into said memory means;

control means for accessing said memory means to enable said updated filter coefficients to be selectively transferred from said equalizer directly to the coefficient inputs of one or more recursive digital filters;

multiplexing means for time sharing said equalizer over a plurality of transmission lines, including means for selectively time multiplexing a plurality of digital input signals from N transmission lines to said means for computing in time multiplexed sequence;

means for selectively computing N series of said updated filter coefficients, one of N being associated with each of said transmission lines;

means for distributing said N series of said updated filter coefficients to said memory means; and

means associated with said distributing means for selectively transferring said N series of updated filter coefficients to N recursive digital filters, each associated with one of said N transmission lines.

4,386,431

X-RAY FILM CASSETTE

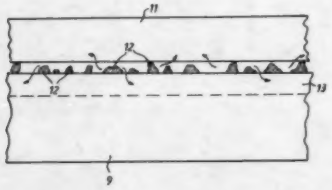
Willy K. Van Landeghem, St. Gillis Waas; Petrus J. De Maayer, Ranst; Francois P. Loots, Mortsel; Hendrik A. Pattyn, Willrjk, all of Belgium; Walter Bauer, Munich, Fed. Rep. of Germany; Heinrich Farber, Munich, Fed. Rep. of Germany; Jürgen Müller, Munich, Fed. Rep. of Germany, and Manfred Schmidt, Munich, Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Nov. 12, 1981, Ser. No. 320,718

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1980, 3043070

Int. Cl.³ G03B *41/18*

U.S. Cl. 378—187 **16 Claims**



1. An X-ray film cassette, comprising a body part; a cover part movable relative to said body part between open and closed position; locking means for locking and unlocking said body and cover parts relative to one another; magnetic means including a magnetic plate and a counterplate attractable to said magnetic plate, said magnetic and counterplates being associated with said body and cover parts; and at least a reinforcing foil arranged to be brought together with a film between said magnetic plate and counterplate, said reinforcing foil having a surface arranged to face toward the film and being rough with a roughness of between 10 and 60 microns.

4,386,432

CURRENCY NOTE IDENTIFICATION SYSTEM

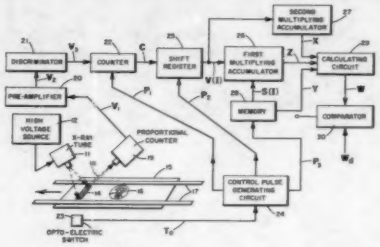
Yashushi Nakamura, Yokohama; Ko Ohtombe, Tokyo, and Kouji Izawa, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 17, 1980, Ser. No. 198,169

Claims priority, application Japan, Oct. 31, 1979, 54-139859

Int. Cl.³ G06K *9/00*

U.S. Cl. 382—7 **6 Claims**



1. A currency identification system for examining an authenticity characteristic of a detected currency and comparing it to an authenticity characteristic of a genuine currency to determine if the detected currency is genuine comprising:

memory means for storing a first and second series of first electrical signals representing the authenticity characteristics of said genuine currency, said first series of first electrical signals each corresponding to a discrete successive area of said genuine currency from one end, said second series of first electrical signals each corresponding to a discrete successive area of said genuine currency from another end, the electrical signals of said first series representing a component of a first genuine authenticity vector and the electrical signals of said second series representing a component of a second genuine authenticity vector;

detecting means for scanning said detected currency and generating a first and second series of second electrical signals representing the authenticity characteristic of said detected currency, said first series of second electrical signals each corresponding to a discrete successive area of said detected currency from one end, said second series of second electrical signals each corresponding to a discrete successive area of said detected currency from another end, the electrical signals of said first series representing a component of a first detected authenticity vector and the electrical signals of said second series representing a component of a second detected authenticity vector;

calculating means coupled to said detecting means and said memory means to calculate a first and second value of similarity, said first value of similarity corresponding to a first angle between said first genuine authenticity vector and said first detected authenticity vector, said second value of similarity corresponding to a second angle between said second genuine authenticity vector and said second detected authenticity vector; and

comparing means for comparing the first and second values of similarity with a predetermined value which represents a permissible value for the detected currency corresponding to a genuine currency.

4,386,433

CHARACTER DOUBLING ELIMINATOR

Marion W. Neff, Euless, Tex., assignor to Recognition Equipment Inc., Irving, Tex.

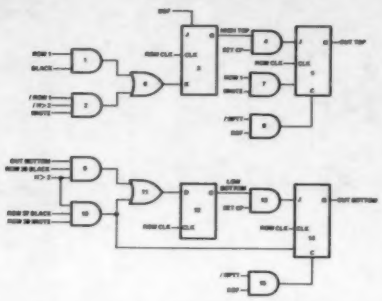
Filed Mar. 24, 1981, Ser. No. 246,977

Int. Cl.³ G06K *9/22*

U.S. Cl. 382—48 **4 Claims**

1. In a character recognition circuit wherein the presence of a scanned character to be read has been determined and the

initial or subsequent character or a part of one of the characters is in the field of view of a multirow scanning array, first means for determining when a portion of a scanned character moves vertically out of the field of view of the scanning array and for providing an output signal indicative thereof, second means for determining when the scanned character returns to the field of

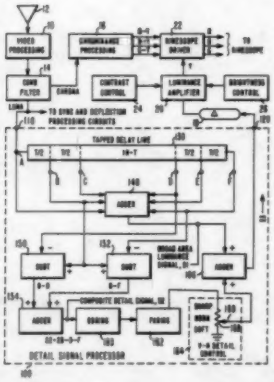


view of the scanning array and providing an output indicative thereof, and third means utilizing the outputs of said first and second means to determine the time and extent said scanned character was partially out of the field of view of said scanning array to determine if presence of the character was lost from the field of view of said scanning array and, when so determined, not to process that character.

4,386,434
VERTICAL AND HORIZONTAL DETAIL SIGNAL PROCESSOR

Walter G. Gibson, Princeton, and Roy M. Christensen, Titusville, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jun. 8, 1981, Ser. No. 271,351
Int. Cl.³ H04N 5/14
U.S. Cl. 455—37 **10 Claims**



1. A video signal processor for processing a video signal having a luminance component comprising:

Signal delay means having an input tap for receiving a video input signal, a plurality of intermediate taps and an output tap;

first signal combining means coupled to each of said input, intermediate and output taps to form a first comb filter means having an output for providing a filtered luminance signal in which vertical and horizontal detail components thereof are attenuated;

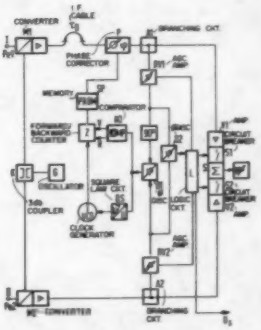
second signal combining means coupled to selected ones of said taps excluding said output of said first means for forming a second comb filter means for providing a composite detail signal having a vertical detail component and a horizontal detail component in a predetermined ratio; and

third signal combining means for combining said filtered luminance signal with said composite detail signal to provide a resultant video output signal, said third signal combining means including control means for varying the ratio of said filtered luminance signal and said composite detail signal whereby the vertical and horizontal detail content of said video output signal may be attenuated for one setting of said control means and enhanced for another setting of said control means.

4,386,435
SPACE DIVERSITY RECEIVER WITH MEANS FOR COMBINING SIGNALS FROM THE TWO CHANNELS

Wolfgang Ulmer, and Klaüs Peterknecht, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 16, 1981, Ser. No. 283,810
Claims priority, application Fed. Rep. of Germany, Aug. 14, 1980, 3030811
Int. Cl.³ H04B 7/08
U.S. Cl. 455—139 **11 Claims**



1. A space diversity receiver in which useful signals of two receiving branches are combined in a summing circuit in an IF band and in which an electronically controlled phase corrector is included in one receiving branch and a phase monitoring circuit is connected at the output of the phase corrector and between the two receiving branches with the output signal of said phase monitoring circuit controlling the phase corrector and characterized in that the phase monitoring circuit consists of a phase discriminator (D1) to which a signal coupled from one receiving branch is supplied through a first automatic gain-controlled amplifier (RV2) without additional phase shift and a signal coupled from the other receiving branch is supplied through a cascade of a second automatic gain-controlled amplifier (RV1) having the same characteristics as said first gain controlled amplifier (RV2) and a 90° phase shift element, an output signal of said phase discriminator supplied to a comparator (KO) which depending on the direction of a phase deviation between the signals of said receiving branches controls the counting direction of a forward/backward counter (Z) and said output signal also supplied to a square-law transfer circuit (QS) which depending on the absolute value of said output signal determines the clock frequency of a clock generator (T) which drives said forward/backward counter (Z); and the respective count positions of said forward/backward

counter (Z) are converted by a memory (SP) into appropriate signals to control positions of the phase corrector P so that it can be set step-by-step.

4,386,436

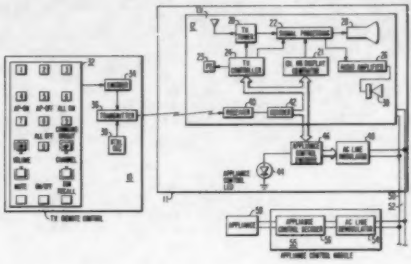
TELEVISION REMOTE CONTROL SYSTEM FOR SELECTIVELY CONTROLLING EXTERNAL APPARATUS THROUGH THE AC POWER LINE

Christopher P. Kocher, Philadelphia, and Abe Abramovich, Lawrenceville, both of Pa., assignors to RCA Corporation, New York, N.Y.

Filed Feb. 27, 1981, Ser. No. 238,839
Int. Cl.³ H04N *5/44*; H04B *11/00*
U.S. Cl. 455—151 **19 Claims**

1. In a remote control television system including a remote control unit having a transmitter means for transmitting a carrier signal, keyboard means for entering data, and encoder means for modulating said carrier signal in accordance with said entered data, and further including a television receiver having receiving means for receiving said carrier signal, decoding means for demodulating said entered data, and television function control means coupled to said decoding means for controlling various functions of said television receiver in response to a first predetermined type of data received from said decoding means, the improvement comprising:

appliance control means coupled to said decoding means for generating an appliance control signal in response to a second predetermined type of data received from said decoding means; and



alternating current line modulator means coupled to an alternating current power supply line for applying an encoded signal representative of said appliance control signal to said alternating current power supply line.

DESIGN PATENTS

GRANTED MAY 31, 1983

ERRATA

For CLASS	See PATENT NO.
D07–309	269,183

269,134
SHIN GUARD

Klas Buring, Thulegatan 27, 852 35 Sundsvall, and Lars A. Eghamn, Postlada 2392, 864 00 Matfors, both of Sweden

Filed Feb. 5, 1981, Ser. No. 231,877
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—27

269,135
TROUSERS

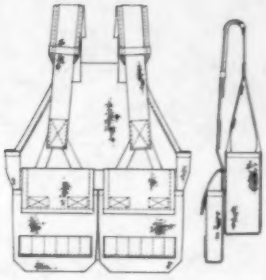
Rita Langmyr, Kungshults Sjukhem, Lägenhet 1, Personalbostäderna, S-255 90 Helsingborg, Sweden

Filed Dec. 15, 1980, Ser. No. 216,412
Claims priority, application Sweden, Jun. 17, 1980, 80-1226
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—28

269,136
VEST

Dennis N. Pressentin, 2284 NE. 61st St., Seattle, Wash. 98115

Filed Oct. 4, 1979, Ser. No. 81,803
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—190



269,137
BOOT

Renzo Balbinot, Vittorio Veneto, Italy, assignor to Nordica S.p.A., Montebelluna, Italy

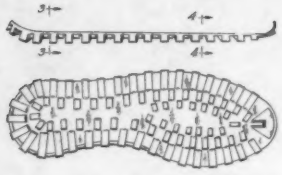
Filed May 4, 1981, Ser. No. 260,156
Claims priority, application Italy, Nov. 17, 1980, 23404/80[U]
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—275

269,138
QUILTED BOOTIE

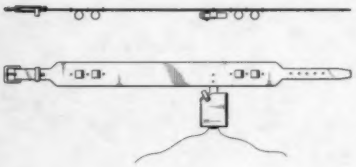
Mattie L. Smith, Rte. 2, Box 194, Chickasha, Okla. 73018

Filed Aug. 29, 1980, Ser. No. 182,481
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—278

269,139
ATHLETIC SHOE OUTER SOLE
Jerry D. Stubblefield, 12225 NW. Big Fir Ct., Portland, Oreg. 97229
Continuation of Ser. No. 962,463, Nov. 21, 1978. This application May 26, 1981, Ser. No. 267,060
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—320

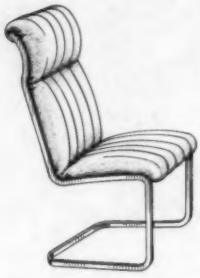


269,140
COMBINED BELT AND HOLDERS FOR BEVERAGE ACCESSORIES
John S. Holmes, 2036 Melwood Dr., Orange, Tex. 77630
Filed Mar. 26, 1981, Ser. No. 250,615
Term of patent 14 years
Int. Cl. D02—*07*
U.S. Cl. D2—381

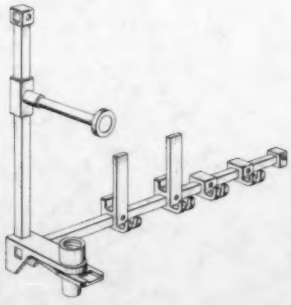


269,141
TOOTHBRUSH HANDLE
Frederick Bugay, 280 Shipley St., San Francisco, Calif. 94102
Filed Sep. 22, 1980, Ser. No. 189,702
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—25

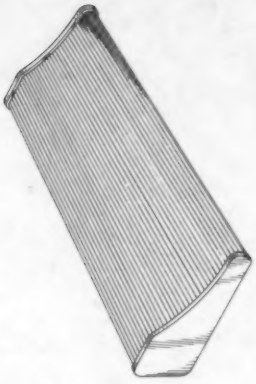
269,142
CHAIR
Arthur Umanoff, Ardsley, N.Y., assignor to Contemporary Shells, Inc., West Hempstead, N.Y.
Filed Jul. 22, 1980, Ser. No. 171,084
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—56



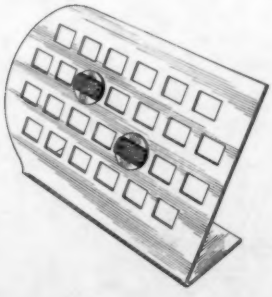
269,143
COMBINED HOLDER FOR TOOTHBRUSHES, DRINKING GLASSES OR THE LIKE
Oskar R. Lohman, Nacka, Sweden, assignor to AB Trama, Nacka, Sweden
Filed Mar. 13, 1980, Ser. No. 130,040
Claims priority, application Sweden, Sep. 13, 1979, 79-2023; Oct. 16, 1979, 79-2525
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—92



269,144
WALL-MOUNTED DESK
Edward H. Mark, U.S. 31 North, Niles, Mich. 49120
Filed May 30, 1980, Ser. No. 154,787
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—128

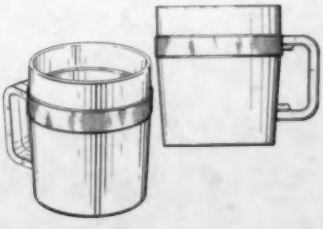


269,145
JEWELRY DISPLAY STAND
Fae E. Druiz, and Carole Roth, both of Brooklyn, N.Y., assignors to General Mills Products Corp., Minneapolis, Minn.
Filed Jul. 11, 1980, Ser. No. 167,571
Term of patent 14 years
Int. Cl. D06—*06*
U.S. Cl. D6—157



269,146
END STANCHION FOR A PARK BENCH
Jimmie Bowman, 900 W. Concord Rd., Apt. A-10, Aston, Pa. 19014
Filed May 19, 1981, Ser. No. 265,256
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—192

269,147
MUG
Edgar F. Trombly, Grosse Pointe Farms, Mich., assignor to Thermo-Serv, Inc., Anoka, Minn.
Filed Oct. 8, 1980, Ser. No. 195,044
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—9

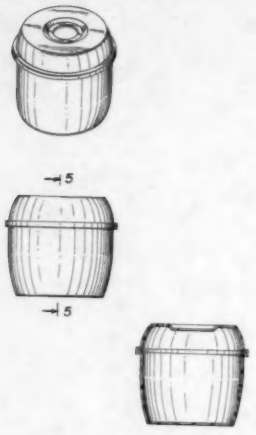


269,148

BEER KEG COOLER

Theodore Trkla, West St. Paul, and William A. Throolin, Delano, both of Minn., assignors to Capital Industries, Inc., South St. Paul, Minn.

Filed Oct. 27, 1980, Ser. No. 201,003
Term of patent 14 years
Int. Cl. D07—*07*
U.S. Cl. D7—77

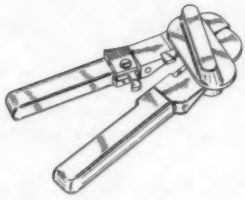


269,150

CAN OPENER

Rolf-Günter Schülein, Singhofen, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed May 21, 1981, Ser. No. 265,921
Claims priority, application Fed. Rep. of Germany, Jan. 20, 1981, 6 MR 1072
Term of patent 14 years
Int. Cl. D07—*99*
U.S. Cl. D8—39

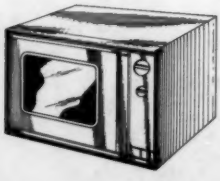


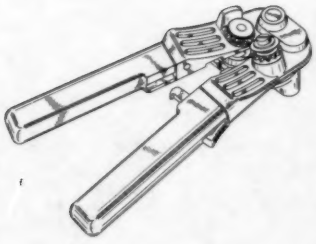
269,149

MICROWAVE OVEN

Takao Miyake; Masayoshi Kawaishi, and Masafumi Numano, all of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan

Filed Jul. 30, 1980, Ser. No. 173,862
Claims priority, application Japan, Feb. 4, 1980, 55-080970
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—351





269,151

CAN OPENER

Rolf-Günter Schüllein, Singhoffen, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

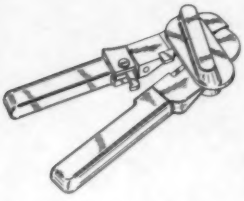
Continuation-in-part of Ser. No. 265,921, May 21, 1981. This application Dec. 28, 1981, Ser. No. 334,623

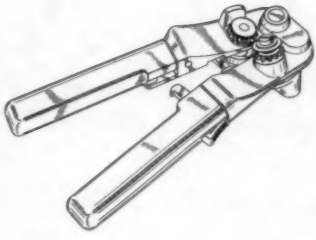
Claims priority, application Fed. Rep. of Germany, Jan. 20, 1981, 6MR 1072

Term of patent 14 years

Int. Cl. D07—*99*

U.S. Cl. D8—39





269,152

TOOL FOR STRIPPING INSULATING COVERING

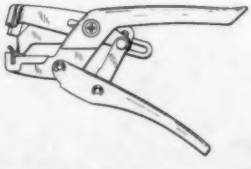
Masahiko Nakamura, Matsuzaka, Japan, assignor to Kabushiki Kaisha Matsuzaka Tekkosho (MCC Corporation), Mie, Japan

Filed Aug. 29, 1980, Ser. No. 182,614

Term of patent 14 years

Int. Cl. D8—*05*

U.S. Cl. D8—52



269,153

PUSH-PULL TOGGLE CLAMP

David A. Whitbread, Flamstead, England, assignor to HMC-Brauer Limited, Milton Keynes, England

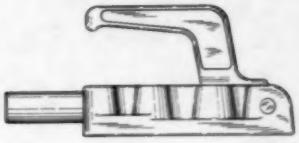
Filed Nov. 7, 1980, Ser. No. 204,998

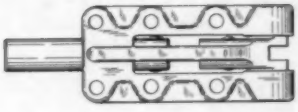
Claims priority, application United Kingdom, May 7, 1980, 994 780

Term of patent 14 years

Int. Cl. D8—*05*

U.S. Cl. D8—72





269,154

CUTTING TOOL

Melvin S. Freedman, 3030 Grande Rue, Green Bay, Wis. 54301, and James F. Walters, 1142 Kenwood St., Green Bay, Wis. 54304

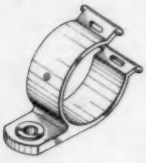
Filed May 7, 1981, Ser. No. 261,551

Term of patent 14 years

Int. Cl. D8—*03*

U.S. Cl. D8—98

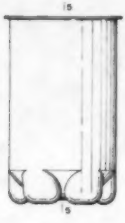
269,155
CLAMP OR THE LIKE
Walter T. Rose, Bothell, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Sep. 22, 1980, Ser. No. 189,271
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—356



269,156
IV BOTTLE CLAMP FOR USE ON WHEEL CHAIR POSTS AND THE LIKE
Raymond Slinkard, 112 S. Grain, Clearwater, Kans. 67026
Filed Jul. 25, 1980, Ser. No. 172,460
Term of patent 14 years
Int. Cl. D24—*02*; D8—*08*
U.S. Cl. D8—396

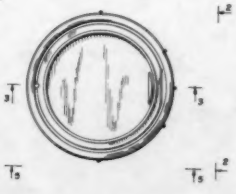
269,157
COMBINED CONTAINER AND SEALING RING
John P. Scott, III, 916 Pecan Way, Petaluma, Calif. 94952
Filed May 30, 1980, Ser. No. 154,716
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—349

269,158
CAN OR THE LIKE
Thomas N. Gaunt, Leeds, England, assignor to Plastona (John Waddington) Limited, Leeds, England
Filed Dec. 3, 1980, Ser. No. 212,489
Claims priority, application United Kingdom, Jun. 12, 1980, 80955282
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—370

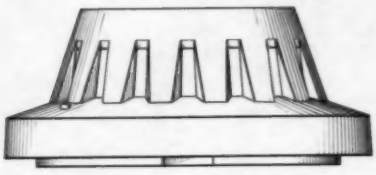


269,159
PACKAGING CONTAINER FOR SHEARS
John Honig, 8 Park Slope Ter., Hawthorne, N.J. 07507
Filed Oct. 3, 1980, Ser. No. 193,721
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—415

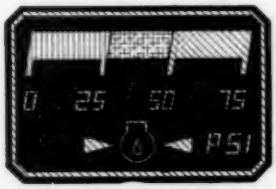
269,160
PLASTIC BAG SUPPORT WITH INTEGRAL HINGED COVER
James Carney, Jr., 20 Louis St., Parlin, N.J. 08859
Filed Jan. 8, 1981, Ser. No. 223,440
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—434



269,161
SMOKE DETECTOR
Kenneth R. Fenne, Glen Ellyn, Ill., assignor to Pittway Corporation, Aurora, Ill.
Filed Mar. 25, 1981, Ser. No. 247,602
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—106

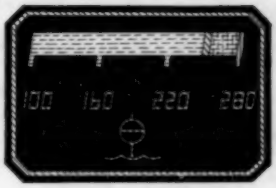


269,162
FACE FOR MOTOR VEHICLE OIL PRESSURE GAUGE
John L. O'Driscoll, 41 Saranac Ave., Youngstown, Ohio 44505
Filed Mar. 18, 1981, Ser. No. 245,109
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—125



269,163
FACE FOR MOTOR VEHICLE OIL LEVEL GAUGE
John L. O'Driscoll, 41 Saranac Ave., Youngstown, Ohio 44505
Filed Mar. 18, 1981, Ser. No. 245,117
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—125

269,164
FACE FOR MOTOR VEHICLE WATER COOLANT TEMPERATURE GAUGE
John L. O'Driscoll, 41 Saranac Ave., Youngstown, Ohio 44505
Filed Apr. 24, 1981, Ser. No. 257,145
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—125



269,165
FACE FOR MOTOR VEHICLE SPEEDOMETER AND ODOMETER
John L. Driscoll, 41 Saranac Ave., Youngstown, Ohio 44505
Filed Apr. 24, 1981, Ser. No. 257,146
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—125

269,166
FACE FOR MOTOR VEHICLE VOLTAGE METER
John L. O'Driscoll, 41 Saranac Ave., Youngstown, Ohio 44505
Filed Apr. 24, 1981, Ser. No. 257,161
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—125

269,167
FIGURINE OF A PERSIAN CAT
Jesus A. Carbajales Santa-Eulalia, and Javier B. Carbajales Santa-Eulalia, both of Montevideo, Uruguay, assignors to John J. Madison Company Inc., LaGuna Hills, Calif.
Filed Oct. 20, 1980, Ser. No. 198,864
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—158

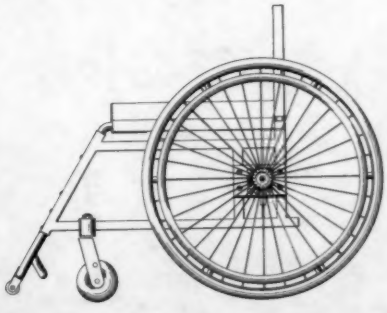
269,168
FIGURINE OF A SKUNK
Jesus A. Carbajales Santa-Eulalia, and Javier B. Carbajales Santa-Eulalia, both of Montevideo, Uruguay, assignors to John J. Madison Company, Inc., LaGuna Hills, Calif.
Filed Oct. 20, 1980, Ser. No. 198,868
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—158

269,169
MOTORCYCLE
Koichiro Ban, Tachikawa; Tsunemi Kawashima, Tokyo; Kazunori Yamada, Machida, and Toshiharu Shimizu, Tokorozawa, all of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Japan
Filed Oct. 8, 1980, Ser. No. 194,959
Claims priority, application Japan, Apr. 23, 1980, 55-16372
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—110

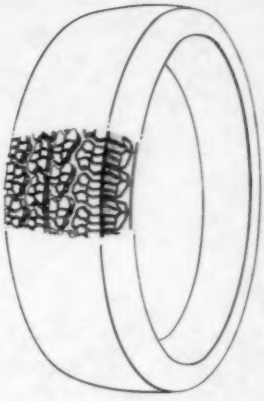
269,170
MOTORCYCLE
Yoshihiko Aoyama, and Makoto Kitagawa, both of Tokyo, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Honda Motor Co., Ltd., Tokyo, Japan
Filed Oct. 8, 1980, Ser. No. 195,074
Claims priority, application Japan, Apr. 15, 1980, 55-14885
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—110

269,171
MOTORCYCLE
Hitoshi Ikeda, Tokorozawa; Masahiro Satoh, Asaka, and Koichi Arima, Wako, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Honda Motor Co., Ltd., Tokyo, Japan
Filed Oct. 9, 1980, Ser. No. 195,640
Claims priority, application Japan, Apr. 24, 1980, 55-16515
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—110

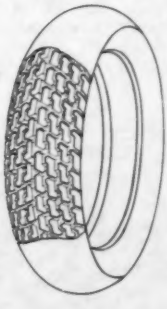
269,172
WHEELCHAIR
Jeffrey P. Minnebraker, Westlake Village, Calif., assignor to Quadra Wheelchairs, Inc., Westlake Village, Calif.
Filed Sep. 8, 1980, Ser. No. 185,306
Term of patent 14 years
Int. Cl. D12—*12*
U.S. Cl. D12—131



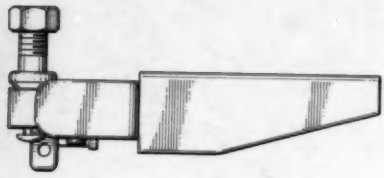
269,173
PNEUMATIC TIRE TREAD AND BUTTRESS
Gerassimos C. Candiliotis, Grosse Pointe Farms, Mich., assignor to Uniroyal, Inc., New York, N.Y.
Filed Feb. 2, 1981, Ser. No. 230,199
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—146



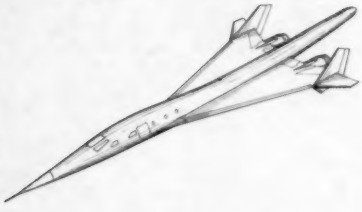
269,174
TIRE
Peter Ingley, Erdington, and David L. Buck, Streetly, both of England, assignors to Dunlop Limited, London, England
Filed Jul. 13, 1981, Ser. No. 282,513
Claims priority, application United Kingdom, Feb. 21, 1981, 999029
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—147



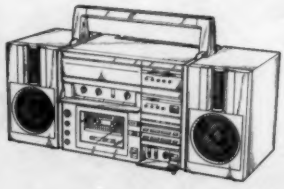
269,175
THREE AXES HITCH
Reino L. Perry, Crystal, Minn., and Earl A. Schule, Inger Rte., Deer River, Minn. 56636, assignors to Earl A. Schule, Deer River, Minn.
Filed Dec. 24, 1980, Ser. No. 219,890
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—162



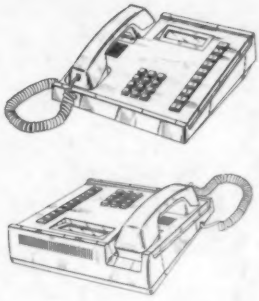
269,176
SUPERSONIC AIRPLANE
Gottfried O. Friebel, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Aug. 13, 1979, Ser. No. 66,160
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D12—338



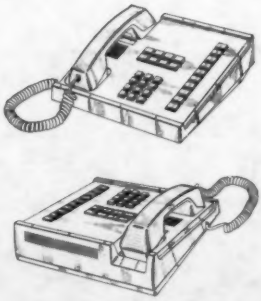
269,177
COMBINED TAPE RECORDER AND RADIO RECEIVER
Kazuhiro Iijima, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan
Filed Jun. 24, 1981, Ser. No. 276,993
Claims priority, application Japan, Apr. 2, 1981, 56-14015
Term of patent 14 years
Int. Cl. D14—*01, 03*
U.S. Cl. D14—5



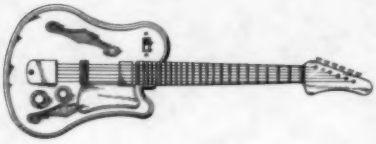
269,178
TELEPHONE WITH DISPLAY
Donald A. Foggia, Ocean, N.J.; Deepak R. Muzumdar, Boca Raton, Fla.; Gerhart F. Klaiber, Boca Raton, Fla., and Rolf E. Schneider, Boca Raton, Fla., assignors to Siemens Corporation, Iselin, N.J.
Filed Oct. 23, 1980, Ser. No. 199,987
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—58



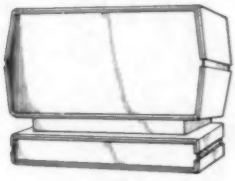
269,179
SMALL TELEPHONE KEYSET
Donald A. Foggia, Ocean, N.J.; Deepak R. Muzumdar, Boca Raton, Fla.; Gerhart F. Klaiber, Boca Raton, Fla., and Rolf E. Schneider, Boca Raton, Fla., assignors to Siemens Corporation, Iselin, N.J.
Filed Oct. 23, 1980, Ser. No. 199,988
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—58



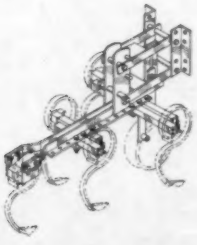
269,180
RADIO
Ted L. Ridings, Parkway Towers, Ste. 2012, 404 James Robertson Pkwy., Nashville, Tenn. 37219
Filed Feb. 27, 1981, Ser. No. 238,959
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—69



269,181
COMPUTER HOUSING OR THE LIKE
Enrique Rodriguez, Saline, and Anthony J. Thomas, Grass Lake, both of Mich., assignors to Xycom, Inc., Saline, Mich.
Filed Jul. 11, 1980, Ser. No. 167,506
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—100



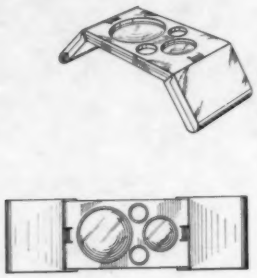
269,182
ROW CROP CULTIVATOR FRAME
Bernard F. Whalen; Patrick T. Whalen, and Marvin C. Kerber, all of Colchester, Ill., assignors to Yetter Manufacturing Company, Colchester, Ill.
Filed Dec. 3, 1980, Ser. No. 212,696
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D15—27



269,183
ESPRESSO COFFEE MAKER
Jan-Francis van Asten, Leek, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed May 4, 1981, Ser. No. 260,526
Claims priority, application Benelux, Nov. 12, 1980, 55205-00
Term of patent 14 years
Int. Cl. D07—*04*; D15—*08*
U.S. Cl. D7—309

269,184
ILLUMINATED MAGNIFIER
Thomas D. Tweedie, Monrovia, Calif., assignor to Tung On Development Co. Ltd., Hong Kong
Filed Oct. 16, 1980, Ser. No. 197,510
Claims priority, application United Kingdom, Apr. 17, 1980, 994526
Term of patent 14 years
Int. Cl. D16—*08*
U.S. Cl. D16—135

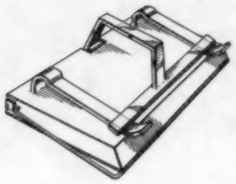
269,185
ILLUMINATED MAGNIFIER
Thomas D. Tweedie, Monrovia, Calif., assignor to Tung On Development Co. Ltd., Hong Kong
Filed Oct. 16, 1980, Ser. No. 197,512
Claims priority, application United Kingdom, Apr. 17, 1980, 994527
Term of patent 14 years
Int. Cl. D16—*08*
U.S. Cl. D16—135



269,186
ELECTRIC BASS GUITAR
Gregg Wilson, Aurora, Colo., and John F. Page, La Mirada, Calif., assignors to CBS Inc., New York, N.Y.
Filed Jun. 10, 1981, Ser. No. 272,464
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—14

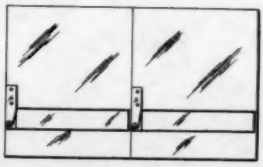
269,187
HOLDER FOR FILING FOLDED MATTER
Thorbjorn Petersen, Hillerod, Denmark, assignor to Hexacon Property ApS, Copenhagen, Denmark
Filed Oct. 27, 1980, Ser. No. 201,248
Term of patent 14 years
Int. Cl. D19—*99*
U.S. Cl. D19—32

269,188
BOOK PAGE HOLDER
Bert Tisdale, 4643 197th St., Langley, British Columbia, Canada (V3A 4H3)
Filed Feb. 1, 1980, Ser. No. 117,801
Term of patent 14 years
Int. Cl. D19—*99*
U.S. Cl. D19—34

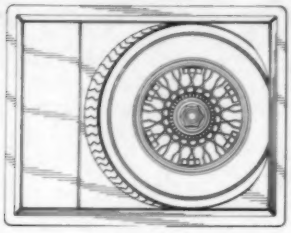


269,189
MECHANICAL PENCIL OR SIMILAR ARTICLE
Gouji Sakaoka, Tokyo, Japan, assignor to Pentel Kabushiki Kaisha, Japan
Filed Apr. 13, 1981, Ser. No. 253,554
Claims priority, application Japan, Oct. 16, 1980, 55-43291
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—48

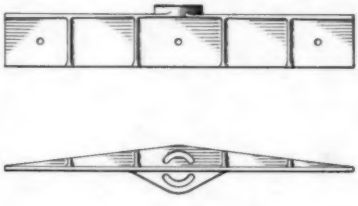
269,190
COMBINED VENDING MACHINE AND STORAGE CABINET UNIT
Walter E. Moore, Bel-Nor, and Albert K. Grethey, Bridgeton, both of Mo., assignors to UMC Industries Inc., Stamford, Conn.
Division of Ser. No. 945,839, Sep. 26, 1978, Pat. No. Des. 262,894. This application May 22, 1981, Ser. No. 266,179
Term of patent 14 years
Int. Cl. D20—*01*
U.S. Cl. D20—4



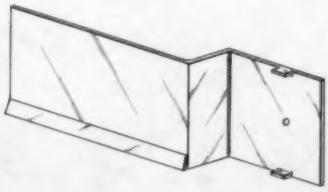
269,191
WHEEL COVER DISPLAY
William J. Segal, Van Nuys, Calif., assignor to Orion Industries, Inc., Compton, Calif.
Filed May 4, 1981, Ser. No. 259,850
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D20—35



269,192
SIGN BRACKET
Jack J. Friedman, 8451 SW. 85 St., Miami, Fla. 33143
Filed Feb. 23, 1981, Ser. No. 236,745
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D20—41



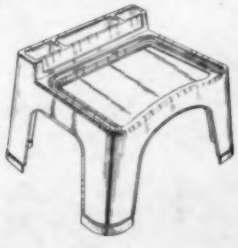
269,193
CARDHOLDER
Joyce E. Lazzara, 2912 Villa Rosa Park, Tampa, Fla. 33611, and Michael H. Patterson, 5710 River Ter., Tampa, Fla. 33604
Filed Apr. 13, 1981, Ser. No. 253,212
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D20—43



269,194
GAME PIECE
Cletis O. Butler, 212 Waubonsee Dr., Minooka, Ill. 60447
Filed Sep. 15, 1980, Ser. No. 186,992
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—51

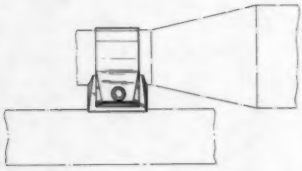
269,195
SIMULATIVE TOY KAZOO
Philip W. May, 15 Pearl Crest Ct., Pearl River, N.Y. 10965
Filed Feb. 18, 1981, Ser. No. 235,748
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—64

269,196
TOY DESK
Mel Appel, Nine Nottingham Rd., Livingston, N.J. 07039, and George Kress, Scotch Plains, N.J., assignors to Mel Appel, Livingston, N.J.
Filed Jul. 16, 1981, Ser. No. 284,068
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—121

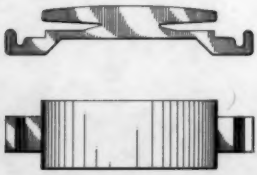


269,197
COMBINED MONKEY FIGURE AND WHEEL CHAIR
Margaret K. Gibbons, 418 Walker St., Lowell, Mass. 01851
Filed Jan. 2, 1981, Ser. No. 222,524
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—156

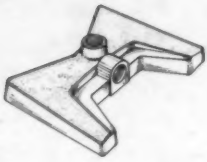
269,198
TELESCOPIC SIGHT MOUNT
Stanley A. Mileski, 9343 Hermosa Hills Dr., Tucson, Ariz. 85710
Filed Apr. 2, 1981, Ser. No. 251,027
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—7



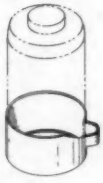
269,199
LOBSTER TRAP CLEAT
Emile A. P. Plante, 74 Badgers Island, Kittery, Me. 03904
Filed Jun. 29, 1981, Ser. No. 229,625
Term of patent 14 years
Int. Cl. D22—*06*
U.S. Cl. D22—18



269,200
SPRINKLER BASE
Frederick G. Mackay, Tarzana; Craig R. Tisserat, Alta Loma; Paul G. Mayr, Glendora, and Enric C. Mendoza, Walnut, all of Calif., assignors to Rain Bird Consumer Products Mfg. Corp., Duarte, Calif.
Filed Dec. 3, 1980, Ser. No. 212,405
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—7

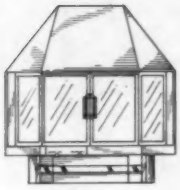


269,201
PROTECTOR FOR PEST CONTROL SPRAYER
John H. Mobley, 290 Whites Rd., Lansdale, Pa. 19446
Filed Nov. 24, 1980, Ser. No. 209,870
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—18



269,202
WATER CLOSET FLUSH TANK
Bruce R. Thompson, Tranmere, Australia, assignor to UPL Group Limited, Brisbane, Australia
Filed Aug. 28, 1980, Ser. No. 182,035
Claims priority, application Australia, May 1, 1980, 80,839
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—66

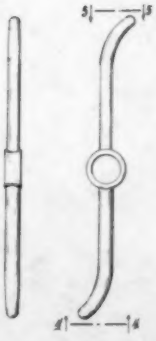
269,203
HEATING UNIT
Norman Wilkinson, Hastings, New Zealand, assignor to Fire Nymph Products, Limited, Hastings, New Zealand
Filed Jul. 1, 1980, Ser. No. 165,113
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—*97*



269,204
DENTAL HYGIENE DEVICE
Charles A. Trepp, 1587-C Morse Ave., Ventura, Calif. 93003
Filed Feb. 5, 1981, Ser. No. 231,767
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—15

269,205
IMPLANTABLE DEFIBRILLATOR OR SIMILAR ARTICLE
Alois A. Langer, Pittsburg, and Marlin S. Heilman, Gibsonia, both of Pa., assignors to Mieczyslaw Mirowski, Owings Mills, Md.
Filed Aug. 5, 1980, Ser. No. 175,671
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—17

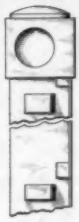
269,206
CERVICAL DILATOR
Richard D. Glassman, Tacambaro-Centro De Salud, Tacambaro, Michoacan, Mexico
Filed Mar. 27, 1981, Ser. No. 248,244
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—23



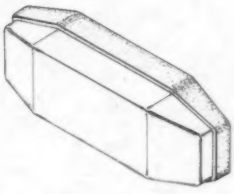
269,207
DISPOSABLE SURGICAL CLAMP
John B. Marlowe, 85 Meadow Woods Rd., Great Neck, N.Y. 11020
Filed Mar. 28, 1980, Ser. No. 134,950
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—27

269,208
PORTABLE HYDROTHERAPEUTIC BUBBLE MAT
Daryl L. Clarke, 14 Nerong Rd., Lambton, N.S.W., 2299, Australia
Filed Oct. 6, 1980, Ser. No. 194,402
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—38

269,209
COMBINED RIGHT ANGLED FENCE POST AND CAP
Bernard L. Hegarty, 3746 Oakland Rd., Bethlehem, Pa. 18017
Filed Jan. 5, 1981, Ser. No. 222,720
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—78



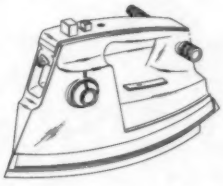
269,210
VEHICLE SIGNAL LIGHT
David S. Cutlip, and Judyth Cutlip, both of 179 Candlewood Path, Dix Hills, N.Y. 11746
Filed Apr. 13, 1981, Ser. No. 254,017
Term of patent 14 years
Int. Cl. D26—*05, 06*
U.S. Cl. D26—28



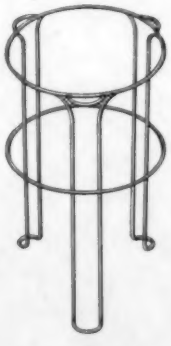
269,211
LIGHTER
Franz A. Stuetzer, Muehlheim am Main, and Bernd Figur, Rodgau, both of Fed. Rep. of Germany, assignors to Rowenta-Werke GmbH, Offenbach am Main, Fed. Rep. of Germany
Filed Apr. 17, 1979, Ser. No. 31,196
Claims priority, application Fed. Rep. of Germany, Oct. 20, 1978, 5MR 10138
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—42

269,212
BATH TUB SCRUBBER
Franklin L. Dowe, Box 98A, New Rd., Pedricktown, N.J. 08067
Filed Oct. 5, 1981, Ser. No. 308,764
Term of patent 14 years
Int. Cl. D7—05
U.S. Cl. D32—51

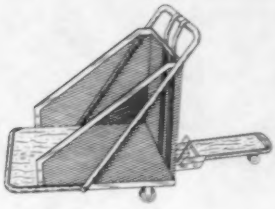
269,213
STEAM IRON
Daniel A. Martin, King of Prussia, Pa., assignor to SCM Corporation, New York, N.Y.
Filed Mar. 24, 1981, Ser. No. 247,041
Term of patent 14 years
Int. Cl. D7—05
U.S. Cl. D32—70



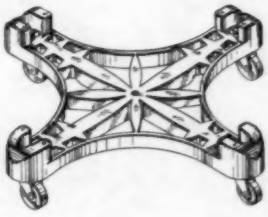
269,214
INVERTIBLE TRASH BAG HOLDER
Ruben Q. Martinez, Sr., San Antonio, Tex., assignor to Cruz P. Martinez, San Antonio, Tex
Filed Oct. 9, 1980, Ser. No. 195,632
Term of patent 14 years
Int. Cl. D7—05
U.S. Cl. D34—6



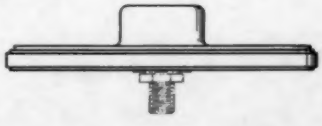
269,215
CART
Charles L. Caine, 4783 E. Lamona Ave., Fresno, Calif. 93703
Filed Dec. 8, 1980, Ser. No. 213,957
Term of patent 14 years
Int. Cl. D12—02
U.S. Cl. D34—17



269,216
LOAD CARRYING DOLLY
Robert R. Greenheck, Aurora, Colo., assignor to R. & D. Greenheck Manufacturing Co., Inc., Aurora, Colo.
Filed Aug. 11, 1980, Ser. No. 177,111
Term of patent 14 years
Int. Cl. D12—02
U.S. Cl. D34—23



269,217
CORNER DISC FOR CHAIN CONVEYORS
Wasyly G. Hodlewsky, Milwaukee, and Roger H. Schroeder, Greendale, both of Wis., assignors to Rexnord Inc., Milwaukee, Wis.
Filed Oct. 27, 1980, Ser. No. 200,878
Term of patent 14 years
Int. Cl. D12—05
U.S. Cl. D34—35

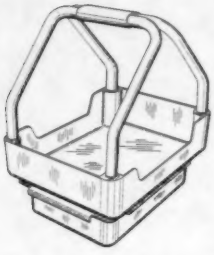


269,218

COMBINED CARRYING TRAY AND SLIDING DRAWER

Laurie Berman, R.R. #1, Palgrave, Ontario, Canada

Filed May 27, 1981, Ser. No. 267,613
Claims priority, application Canada, Apr. 29, 1981, 2904816
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D34—44



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TO WHOM

PATENTS WERE ISSUED ON THE 31ST DAY OF MAY, 1983

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Kuwana, Noriaki; Abe, Shinya; and Yamada, Kouzi, 4,386,227, Cl. 568-875.000.

Abekura, Makoto: *See*—
Kuramochi, Hiroshi; Nakajo, Noriaki; Abekura, Makoto; and Matsumoto, Jun, 4,386,175, Cl. 524-32.000.

Abex Corporation: *See*—
Bell, Edward A.; and Solt, William E., 4,385,563, Cl. 105-377.000.

Abishev, Dzhantore N.; Buketov, Evnei A.; Baltynova, Nazymkul; Malyshev, Vitaly P.; Oralov, Turabai A.; Sakpanov, Egizbai S.; Kobzhasov, Abubakir K.; and Orazalina, Kazken N. Method of treating pyrite bearing polymetallic material. 4,386,061, Cl. 423-571.000.

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Kocher, Christopher P.; and Abramovich, Abe, 4,386,436, Cl. 455-151.000.

Ackerman, Alfred J.; and Lull, David L., to Delaware City Plastics Corporation. Process for the post-chlorination of vinyl chloride polymers. 4,386,189, Cl. 525-358.000.

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Adrian, Renate: *See*—
Maurer, Alexander; Adrian, Renate; Wasel-Nielen, Horst-Dieter; Sorbe, Gunter; and Kandler, Joachim, 4,386,024, Cl. 252-523.000.

AEG Power Tool Corporation: *See*—
O'Banion, Michael L., 4,385,443, Cl. 30-393.000.

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Vignes, Jean P.; and Ung, Vincent, 4,386,413, Cl. 364-748.000.

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Bergthaller, Peter; Kunitz, Friedrich-Wilhelm; Schranz, Karl-Wilhelm; and Wolff, Erich, 4,386,155, Cl. 430-372.000.
Sylla, Jurgen; and Muller, Hermann, 4,385,815, Cl. 353-104.000.
Van Landeghem, Willy K.; De Maayer, Petrus J.; Loots, Francois P.; Pattyn, Hendrik A.; Bauer, Walter; Farber, Heinrich; Muller, Jurgen; and Schmidt, Manfred, 4,386,431, Cl. 378-187.000.

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De Roeck, Joseph I.; Blondeel, Eric J.; and Christiaen, Lucien A., 4,385,716, Cl. 226-18.000.

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Hayashi, Yoshihiro, 4,385,752, Cl. 266-265.000.

Ainbinder, Zarah; and Parshall, George W., to Du Pont de Nemours, E. I., and Company. Oxidative alkoxycarbonylation of olefins with palladium/heteropoly acid catalyst systems. 4,386,217, Cl. 560-207.000.

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Carmichael, Floyd W., 4,385,908, Cl. 55-39.000.

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Wempe, Lawrence K., 4,386,183, Cl. 524-405.000.

Aisin Kako Kabushiki Kaisha: *See*—
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Yamamoto, Yasunobu; Sakabe, Toshiaki; and Hamada, Eiji, 4,385,682, Cl. 192-107.00M.

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Hori, Takanobu; Arai, Fumio; and Kodama, Hisashi, 4,385,599, Cl. 123-90.580.

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Kobayashi, Kouzi; and Kobayashi, Keizo, 4,385,531, Cl. 74-869.000.

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Fujimaki, Hiroto; Ajima, Shigetoshi; and Watanabe, Kazuhiro, 4,386,168, Cl. 523-155.000.

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Kawada, Shigeo; Akaku, Fumiyoshi; and Yukawa, Seiki, 4,386,278, Cl. 307-9.000.

Akao, Mutsuo, to Fuji Photo Film Co., Ltd. Wrapping materials. 4,386,124, Cl. 428-35.000.

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Hasegawa, Ryusuke, 4,385,944, Cl. 148-104.000.
Koford, Stuart K.; Colwell, John C.; and Simon, Alexander D., 4,385,793, Cl. 339-61.00R.
McCarthy, Timothy W., 4,385,996, Cl. 210-719.000.
Wu, Tse C.; and Segal, Leon, 4,386,196, Cl. 528-182.000.

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Schucker, Thomas R., 4,385,865, Cl. 415-150.000.

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Kondo, Shiro; and Akazawa, Michitada, 4,386,252, Cl. 200-296.000.
Oyama, Minoru, 4,386,251, Cl. 200-296.000.

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Rasala, Edward; Wallach, Steven; Alsing, Carl J.; Holberger, Kenneth D.; Holland, Charles J.; West, Thomas; Guyer, James M.; Coyle, Richard W.; Ziegler, Michael L.; and Druke, Michael B., 4,386,399, Cl. 364-200.000.

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Aluminum Company of America: *See*—
Johnson, Roger C.; Stewart, Donald L., Jr.; Tsao, Utah; and Wohleber, David A., 4,385,964, Cl. 203-50.000.

Amchem Products, Inc.: *See*—
McCready, Newton W.; and Groffman, Stephan S., 4,386,121, Cl. 427-235.000.

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Hanslik, Wilhelm, 4,385,883, Cl. 425-204.000.

American Petro Mart, Inc.: *See*—
Hedrick, Harold N.; and Whitney, Solon G., 4,385,993, Cl. 210-675.000.

Ames, Geoffrey C., to Owens-Illinois, Inc. Parrot-beakable freestanding plastic drum assemblage. 4,385,709, Cl. 220-71.000.

AMP Incorporated: *See*—
Lucius, John E., 4,385,794, Cl. 339-97.00R.

Ampex Corporation: *See*—
Morrison, Eric F., 4,386,363, Cl. 358-22.000.

Amtech Patent Licensing Corporation: *See*—
Chiang, David; Chu, Mosi; and Manber, Solomon, 4,386,271, Cl. 250-234.000.

Anderson, Ardis L., to Conoco Inc. Process for recovery of bitumen from tar sands. 4,385,982, Cl. 208-11.0LE.

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Anderson, Robert L., to Copeland Corporation. Compressor. 4,385,872, Cl. 417-571.000.

Anderson, Scott. Process, apparatus and manufacture relating to high-purity, sodium amalgam particles useful in lamp manufacture. 4,386,050, Cl. 420-526.000.

Ando, Hiromi: *See*—
Masuda, Yoshio; Fukasawa, Atsushi; Sato, Takuro; Yoshida, Tatsumasa; and Ando, Hiromi, 4,386,328, Cl. 333-202.000.

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Dolata, Hans; Meyle, Werner; Kaiser, Hans-Georg; Odenwald, Gerhard; and Weyda, Gunther, 4,385,532, Cl. 76-25.00A.

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Fawcett, Sherwood L.; and Anno, James N., 4,385,498, Cl. 60-650.000.

Anthony, Philip J., to Bell Telephone Laboratories, Incorporated. AlGaAs-AlGaAsSb Light emitting diodes. 4,386,429, Cl. 372-45.000.

Aoki, Shigeo; Isogami, Shuzo; Tamamura, Junichi; Nagayoshi, Tatsuo; Yasui, Masaru; and Hirao, Susumu, to Hosiden Electronics Co., Ltd. Method for frequency regulation of tuning-fork vibrator. 4,385,473, Cl. 51-281.00R.

Aono, Toshiaki, to Fuji Photo Film Co., Ltd. Process for the production of multicolor optical filters. 4,386,144, Cl. 430-7.000.

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Watanabe, Nobuatsu; Nakajima, Tsuyoshi; Yamada, Hiroaki; and Ohsawa, Noboru, 4,386,137, Cl. 428-457.000.

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Hori, Takanobu; Arai, Fumio; and Kodama, Hisashi, 4,385,599, Cl. 123-90.580.

Araki, Yoshitaka: *See*—
Toyoda, Kenji; Araki, Yoshitaka; and Watanabe, Sakuji, 4,385,819, Cl. 354-36.000.

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Ardal og Sunndal Verk A/S: *See*—
Saether, Torstein; and Heggset, Bjarne, 4,385,751, Cl. 266-207.000.

Arima, Hideo: *See*—
Tanei, Hirayoshi; Ikegami, Akira; Arima, Hideo; Isogai, Tokio; and Kawabata, Kiyoshi, 4,386,387, Cl. 361-321.000.

Arlt, Dieter; Homeyer, Bernhard; Hammann, Ingeborg; and Paul, Volker, to Bayer Aktiengesellschaft. Pesticidally active phosphoric (phosphonic) acid ester amides. 4,386,082, Cl. 424-215.000.

Armco Inc.: *See*—
Compton, Thomas A.; and Byrd, Fred, 4,385,945, Cl. 148-156.000.

Arndt, Carl; and Mueller, Martin, to Owens-Illinois, Inc. Method of forming a cup-like container. 4,386,044, Cl. 264-230.000.

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Sorce, Peter S.; and Clifford, Earl W., 4,385,517, Cl. 73-38.000.

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Asada, Toyohiko: *See*—
Okazaki, Takuya; Asada, Toyohiko; Nishihata, Masahide; Morishita, Yukitoshi; and Oda, Keijiro, 4,385,653, Cl. 152-209.00R.

Asahi-Dow Limited: *See*—
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Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Akashi, Kazuo; Yoshida, Toyonobu; and Ishizuka, Ryuichi, 4,386,258, Cl. 219-121.0PM.
Shiraki, Toshinori; Hoshi, Susumu; and Hayano, Fusakazu, 4,386,125, Cl. 428-36.000.

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Asano, Toshihisa: *See*—
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ASEA Aktiebolag: *See*—
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Karasawa, Setsuyuki; Aso, Minosaku; Goto, Yoshinori; and Nikaido, Akira, 4,386,287, Cl. 310-49.00R.

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Rentzea, Costin; Feuerherd, Karl-Heinz; Zeeh, Bernd; and Jung, Johann, 4,385,925, Cl. 71-92.000.
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Schuette, Wilhelm; Hilt, Albrecht; Walter, Manfred; and Boehlke, Klaus, 4,386,178, Cl. 524-100.000.
Theobald, Hans; Wuerzer, Bruno; and Kiehs, Karl, 4,385,924, Cl. 71-88.000.

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Patton, John T., Jr.; and Narayan, Thirumurti, 4,386,167, Cl. 521-161.000.

Basinger, Harry A., to Reynolds Metals Company. Thickness gauge. 4,385,445, Cl. 33-147.00R.

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Batt, Robert S., to Torrington Company Limited, The. Sealed roller bearings. 4,385,789, Cl. 308-187.100.

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Batz, Friedrich; and Lauer, Karl, to Boehringer Manheim GmbH. Process for the production of 5-(4'-chloro-5'-sulfamoyl-2'-thenylamino)-phenyltetrazole. 4,386,212, Cl. 548-252.000.
Batzold, John S.: *See*—
Skopp, Alvin; Ciprios, George; and Batzold, John S., 4,385,970, Cl. 204-108.000.
Bauer, Andreas; and Protze, Dieter, to Volkswagenwerk Aktiengesellschaft. Automobile ventilating apparatus. 4,385,549, Cl. 98-2.000.
Bauer, James W., to Sanders Associates, Inc. Tripled Nd:YAG Pumped Tm^{3+} laser oscillator. 4,386,428, Cl. 372-41.000.
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Baumann, Hans-Peter, to Sandoz Ltd. Sulphonic acids of tolyl ether sulphones. 4,386,037, Cl. 260-512.00C.
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Estep, Timothy N., 4,386,069, Cl. 424-101.000.
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Arlt, Dieter; Homeyer, Bernhard; Hammann, Ingeborg; and Paul, Volker, 4,386,082, Cl. 424-215.000.
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Giesecke, Henning; Merten, Rudolf; and Rottmaier, Ludwig, 4,386,213, Cl. 548-264.000.
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Rasshofer, Werner; Dieterich, Dieter; and Meyborg, Holger, 4,386,218, Cl. 564-38.000.
BBC, Brown, Boveri & Company, Limited: *See*—
Roggwiller, Peter; and Sittig, Roland, 4,386,283, Cl. 307-252.00R.
Beadle, Ralph E., to Research Corporation. Intradermal horse sweat test. 4,386,062, Cl. 424-9.000.
Beall, George H., to Corning Glass Works. Alkali metal, calcium fluorosilicate glass-ceramic articles. 4,386,162, Cl. 501-3.000.
Beck, Charles E., to General Electric Company. Fluorescent light unit with dual light levels. 4,386,296, Cl. 315-53.000.
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Beck, William C. Hazardous waste transport container liner and process for manufacturing same. 4,385,953, Cl. 156-200.000.
Becker, Dale F., to Sangamo Weston, Inc. Electricity theft preventing meter. 4,386,314, Cl. 324-110.000.
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Venaas, Norman B.; and Becker, Dale F., 4,386,313, Cl. 324-110.000.
Becker, Floyd W.; and Asak, Kare, to Turbo Resources Ltd. Inner pipe support arrangement for double-walled drill pipe. 4,385,668, Cl. 175-135.000.
Beckman, E. G., Jr.: *See*—
Walls, Earl M.; and Beckman, E. G., Jr., 4,385,477, Cl. 52-743.000.
Becton, Dickinson and Company: *See*—
Fergason, James L., 4,385,844, Cl. 374-160.000.
Beecham Group Limited: *See*—
Corbett, David F., 4,386,029, Cl. 260-245.20T.
Beeding, Jack D.: *See*—
Mattox, E. Michael; Mask, E. Dale; and Beeding, Jack D., 4,385,760, Cl. 272-131.000.
Beery, Jack, to Xerox Corporation. Sheet inverting and stacking apparatus. 4,385,756, Cl. 271-186.000.
Behr, Fred E., to Minnesota Mining and Manufacturing Company. Process for the preparation of cyclic perfluoroaliphaticdisulfonic acid anhydrides. 4,386,214, Cl. 549-11.000.
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Kalmowitz, Sheldon; Beigel, Regis; Sutphin, Eldon; and McGhee, Charles, 4,386,275, Cl. 250-342.000.
Beisel, Victor A. Wind driven air pump. 4,385,871, Cl. 417-334.000.
Belcher, Richard A.: *See*—
Kozacka, Frederick J.; and Belcher, Richard A., 4,386,334, Cl. 337-251.000.
Belforte, Piero; Bostica, Bruno; and Pilati, Luciano, to Cselt - Centro Studi e Laboratori Telecomunicazioni S.p.A. Switching unit for the transfer of digitized signals in PCM system. 4,386,425, Cl. 370-66.000.
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Vrignaud, Yves; and Belin, Michel, 4,386,107, Cl. 426-62.000.
Bell, Edward A.; and Solt, William E., to Abex Corporation. Roof support for a railroad car roof. 4,385,563, Cl. 105-377.000.
Bell, Richard T.: *See*—
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Bell, Ted A., to Pretty Products, Inc. Attachment clip. 4,385,856, Cl. 411-112.000.
Bell Telephone Laboratories, Incorporated: *See*—
Amelse, Jeffrey A.; Bohrer, Michael P.; and Wood, Darwin L., 4,385,915, Cl. 65-3.120.
Anthony, Philip J., 4,386,429, Cl. 372-45.000.
Chien, Ta-Mu, 4,386,239, Cl. 179-84.0VF.
Finegan, Sean N.; McFee, James H.; Swartz, Robert G.; and Voshchenkov, Alexander M., 4,385,946, Cl. 148-175.000.
Keller, Harry N.; Morabito, Joseph M.; and Pitetti, Raymond C., 4,385,966, Cl. 204-15.000.
Scavuzzo, Robert J., 4,386,282, Cl. 377-81.000.
Seidel, Harold, 4,386,242, Cl. 179-170.00T.
Toy, Wing N., 4,386,402, Cl. 364-200.000.
Bellamy, Roger, to Camloc Industrial Fixings (UK) Limited. Clamping method and device. 4,385,851, Cl. 403-406.000.
Bendix Corporation, The: *See*—
Brown, Arthur K., 4,385,547, Cl. 91-384.000.
DuCharme, Robert T.; and Herzog, Robert E., 4,385,680, Cl. 188-72.400.
Hammond, Robert J., 4,386,390, Cl. 361-412.000.
Harper, Peter W.; and Harvey, Mark C., 4,385,611, Cl. 123-480.000.
Hungerford, William R., 4,386,407, Cl. 364-474.000.
Jordan, David D., 4,385,898, Cl. 464-101.000.
Pauwels, Edward M., 4,385,528, Cl. 74-516.000.
Benedict, Charles E.; Kinney, Kenneth G., Jr.; and Freeman, Robert A., to Wayne H. Colonev Company, Inc. Linked container article carrier. 4,385,696, Cl. 206-443.000.
Bennetot, Remy J. P., to Societe Industrielle de Decoration et Application "Sida". Electrifiable-material applicator. 4,385,588, Cl. 118-638.000.
Bennett, Charles J. Golf ball sphericity gauge. 4,385,447, Cl. 33-178.00B.
Bennett, Matthew C., Jr.: *See*—
Knoll, Glenn F.; Strange, Donald R.; and Bennett, Matthew C., Jr., 4,386,404, Cl. 364-414.000.
Bennett, Steven B., to Burke Company, The. Rebar-connected support means for concrete form panels. 4,385,745, Cl. 249-41.000.
Berg, Wolfgang F.: *See*—
Camenisch, Hans; Bachner, Jarmila; and Berg, Wolfgang F., 4,386,148, Cl. 430-131.000.
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Cereda, Enzo; Donetti, Arturo; del Soldato, Piero; and Bergamaschi, Mario, 4,386,099, Cl. 424-273.00R.
Berger, Michael; Byers, Charles H.; and Magenheimer, John J., to Polaroid Corporation. Diffusion transfer film system with protective layer of copper salt, chitosan and selected polyols. 4,386,151, Cl. 430-228.000.
Berglund, Nils O. H.; and Olsson, Per A., to Studsvik Energiteknik AB. Apparatus for heating breathing gas for divers. 4,386,261, Cl. 219-374.000.
Bergmann, Ewald; Schneider, Franz; Hoffmann, Hartmut; Schumann, Burkhard; and Grupp, Gunther, to L. Schuler GmbH. Control drive for a ram adjustment device on a blanking press. 4,386,304, Cl. 318-561.000.
Bergquist, Thomas A., to Honeywell Inc. Heating and cooling thermostat set points limits set by changeover lever. 4,385,659, Cl. 165-12.000.
Bergthaller, Peter; Kunitz, Friedrich-Wilhelm; Schranz, Karl-Wilhelm; and Wolff, Erich, to Agfa-Gevaert AG. Process for the production of photographic images. 4,386,155, Cl. 430-372.000.
Berkman, Samuel; and Corboy, John F., to RCA Corporation. Susceptor for rotary disc reactor. 4,386,255, Cl. 219-10.49R.
Bernauer, Otto; and Buchner, Helmut, to Daimler-Benz Aktiengesellschaft. Method of preheating motor vehicles with internal combustion engines. 4,385,726, Cl. 237-12.30C.
Bertellotti, Ansano; and Taliste, Arvo, to GTE Automatic Electric Labs Inc. Tool for extracting printed circuit cards. 4,385,438, Cl. 29-764.000.
Bertus, Brent J.; and McKay, Dwight L., to Phillips Petroleum Company. Hydrocarbon cracking zeolitic catalyst. 4,386,015, Cl. 252-455.00Z.
Bethlehem Steel Corporation: *See*—
Rossi, Gregory R., 4,385,936, Cl. 134-18.000.
Beun, Roger A., to Northern Telecom Limited. Printed circuit board assembly. 4,386,388, Cl. 361-399.000.
Bhatti, Muhammad A. Game of strategy directed to entrapment of opponent. 4,385,764, Cl. 273-243.000.
Bieri, Hans; and Rimmele, Karl, to Mecapec S.A. Shearing device for cutting bar-shaped stock such as rolled steel billets. 4,385,538, Cl. 83-169.000.
Bijwaard, Henricus M. J.; and Morcus, Alphonsus, to Shell Oil Company. Lubricating base oil compositions. 4,385,984, Cl. 208-19.000.
Billy The Kid, Inc.: *See*—
Breck, Louis W., Jr., 4,385,571, Cl. 112-121.270.
Bilofsky, Ruth C.: *See*—
Locatell, Louis, Jr.; Rogers, Howard G.; Bilofsky, Ruth C.; Ciecciuch, Ronald F.; and Zepp, Charles M., 4,386,216, Cl. 549-394.000.
Bindhoff, Eduardo W., to Intrusion-Prepakt, Incorporated. Woven fabric form element for forming cast-in-place structures. 4,385,648, Cl. 139-384.00R.
Birdsall, J. Calvin. Method and apparatus for galvanizing articles. 4,386,122, Cl. 427-241.000.

Bitsch, Harald; Donner, Klaus; Horbach, Rainer; and Rump, Peter W., to Mannesmann Demag AG. Traveling crane with top girders at the end of a bridge girder. 4,385,562, Cl. 105-163.00R.

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Pstras, Zbigniew; and Kuczera, Stanislaw, 4,385,778, Cl. 285-134.000.

Bjorkman, Harry K., Jr., to Energy Development Associates, Inc. Multiple stage multiple filter hydrate store. 4,386,140, Cl. 429-19.000.

Black & Decker Inc.: *See*—
Meyerhoefer, Carl E.; and Meyerhoefer, Carl H., 4,385,539, Cl. 83-473.000.

Black, Milton W. Method and means for heating by wood burning. 4,385,620, Cl. 126-77.000.

Blackshaw, Andrew L.: *See*—
Sanborn, David M.; and Blackshaw, Andrew L., 4,385,723, Cl. 236-18.000.

Blais, Rolland: *See*—
Livernois, Jean; and Blais, Rolland, 4,385,456, Cl. 36-115.000.

Blake, John C. Heavy duty vehicle suspension system. 4,385,774, Cl. 280-663.000.

Blaszyk, Paul E.; and Olshansky, Robert, to Corning Glass Works. Long wavelength, low-loss optical waveguide. 4,385,802, Cl. 350-96.330.

Blatchford, Michael I., to Ralph Blatchford & Company Limited. Load handling apparatus. 4,385,861, Cl. 414-542.000.

Blee, Timothy J., to Associated Engineering Limited. Speed control actuator. 4,385,675, Cl. 180-178.000.

Bleijerveld, Hendrik C.; and Oude Elberink, Bernard H. M., to Hollandse Signaalapparaten B.V. Threshold circuit for radar video signals. 4,386,353, Cl. 343-7.00A.

Blobel, Harald: *See*—
Mualler, Walter; Studer, Urs P.; and Blobel, Harald, 4,385,541, Cl. 84-1.140.

Blommers, Elizabeth A.; Warfel, David R.; and Ingram, Alvin R., to Atlantic Richfield Company. Coated beads with macromonomer-styrene polymerizate coating. 4,386,133, Cl. 428-407.000.

Blondeel, Eric J.: *See*—
De Roeck, Joseph I.; Blondeel, Eric J.; and Christiaen, Lucien A., 4,385,716, Cl. 226-18.000.

Bobath, Peter L., to Spacetrekker Products Limited. Device for joining panels edge-to-edge. 4,385,850, Cl. 403-205.000.

Boden, Richard M., to International Flavors & Fragrances Inc. Flavor use of mixtures containing 1-n-butoxy-1-ethanol acetate. 4,386,063, Cl. 424-49.000.

Boehlke, Klaus: *See*—
Schuette, Wilhelm; Hilt, Albrecht; Walter, Manfred; and Boehlke, Klaus, 4,386,178, Cl. 524-100.000.

Boehringer Manheim GmbH: *See*—
Batz, Friedrich; and Lauer, Karl, 4,386,212, Cl. 548-252.000.

Boeing Company, The: *See*—
Drew, Prentis B.; and Nalos, Ervin J., 4,386,355, Cl. 343-112.00D.
Parrick, C. Earl; and Busching, Forrest B., 4,385,912, Cl. 55-329.000.
Vermilye, Michael L., 4,385,423, Cl. 24-71.00T.

Boettcher, William C., to D.O.V.E. Equipment Corporation. Helical vending machine with pivot rod adjustment. 4,385,713, Cl. 221-75.000.

Bogatyrev, Anatoly D.: *See*—
Daiker, Artur L.; Veis, Anatoly I.; Bogatyrev, Anatoly D.; Kochengin, Evgeny Y.; Palko, Viktor N.; Novoselov, Nikolai M.; Volchematiev, Jury V.; and Morozov, Gennady Y., 4,385,941, Cl. 148-9.500.

Boger, Manfred; and Drabek, Jozef, to Ciba-Geigy Corporation. Phenyl-N-(cyanoalkylsulfenyl)-N-methylcarbamates and the use thereof in pest control. 4,386,102, Cl. 424-304.000.

Boger, Manfred: *See*—
Drabek, Jozef; and Boger, Manfred, 4,386,101, Cl. 424-285.000.

Bohrer, Michael P.: *See*—
Amelse, Jeffrey A.; Bohrer, Michael P.; and Wood, Darwin L., 4,385,915, Cl. 65-3.120.

Bolton, Theodore S.: *See*—
Perrone, Terrence J.; Bolton, Theodore S.; and Caronna, Cosimo, 4,385,504, Cl. 62-259.100.

Bonse, Bernhard; Kemmner, Ulrich; Klinkenberg, Reinhard; Knapp, Heinrich; and Wissmann, Michael, to Robert Bosch GmbH. Apparatus for regulating the idling RPM in an internal combustion engine. 4,385,603, Cl. 123-339.000.

Booth, John L., to Booth Manufacturing Company. Multiple station packaging machine and method for packaging. 4,385,482, Cl. 53-538.000.

Booth Manufacturing Company: *See*—
Booth, John L., 4,385,482, Cl. 53-538.000.

Bopp & Reuther GmbH: *See*—
Huthloff, Eckhard, 4,385,526, Cl. 73-861.220.

Borda, Eduardo R. Split coupling. 4,385,896, Cl. 464-76.000.

Borden, Inc.: *See*—
Merritt, Carleton G.; Wingerd, Winston H.; and Keller, David J., 4,386,106, Cl. 426-5.000.

Borge, Gene A.: *See*—
Gabry, Frank F.; and Borge, Gene A., 4,385,471, Cl. 49-322.000.

Borgo, Eraldo, to Made Italiana s.r.l. Pharmaceutical composition for oral administration containing cytidine diphosphocholine. 4,386,077, Cl. 424-180.000.

Bostica, Bruno: *See*—
Belforte, Piero; Bostica, Bruno; and Pilati, Luciano, 4,386,425, Cl. 370-66.000.

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Moinet, Gerard H.; Dostert, Philippe L.; and Bourgery, Guy R., 4,386,090, Cl. 424-248.400.

Bowen, James L., to Genpak Corporation. Child resistant closure assembly. 4,385,711, Cl. 220-284.000.

Bowen, Robert F.; Freedman, George; and Teich, Wesley W., to Raytheon Company. Microwave expresso coffee maker and process. 4,386,109, Cl. 426-241.000.

Bowen, Theodore, to University of Arizona Foundation. Radiation-induced thermoacoustic imaging. 4,385,634, Cl. 128-653.000.

Brady, Joseph M.; Cordes, Franz R.; Gedrat, Klaus H.; Goffredo, Daniel L.; Meyer, Walter; and Shakley, Conrad D., to Chemcut Corporation. Electroplating apparatus and method. 4,385,967, Cl. 204-27.000.

Brand, Bernhard: *See*—
Richter, Bruno; and Brand, Bernhard, 4,386,322, Cl. 328-63.000.

Brandes, Wilhelm: *See*—
Kranz, Eckart; Kramer, Wolfgang; Buchel, Karl H.; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,386,088, Cl. 424-245.000.

Brandstetter, Franz: *See*—
Naarmann, Herbert; Penzien, Klaus; Brandstetter, Franz; Lindenschmidt, Gerhard; and Seiler, Erhard, 4,386,203, Cl. 544-219.000.

Branner-Jorgensen, Sven, to Novo Industri A/S. Thermal destabilization of bacillus serine proteases. 4,386,160, Cl. 435-221.000.

Branstad, Dennis K.: *See*—
Smid, Miles E.; and Branstad, Dennis K., 4,386,233, Cl. 178-22.080.

Braun, Kurt; Laupp, Gerhard; Leich, Rolf; Saur, Walter; Scheifele, Horst; and Schick, Jurgen, to Robert Bosch GmbH. Method for filling packaging containers by weight. 4,385,670, Cl. 177-1.000.

Brecht, William B.: *See*—
Weidner, Evert C.; and Brecht, William B., 4,386,141, Cl. 429-64.000.

Breck, Louis W., Jr., to Billy The Kid, Inc. Automatic belt loop tacker. 4,385,571, Cl. 112-121.270.

Bremer, Fritz; Kressner, Michael; Wolf, Karlheinz; Nonn, Konrad; Hornle, Reinhold; and Pape, Georg, to Bayer Aktiengesellschaft. Dyestuff preparations, processes for their production and their use for dyeing plastics. 4,386,195, Cl. 528-73.000.

Brennan, John J., to United Technologies Corporation. Alkali metal oxide free backers for energy beam drilling. 4,386,257, Cl. 219-121.0EH.

Breuer, Hermann: *See*—
Treuner, Uwe D.; and Breuer, Hermann, 4,386,199, Cl. 542-420.000.

Brewill, Arthur D., to Metal Closures Venus Packaging Limited. Packaging of articles. 4,385,722, Cl. 229-62.000.

Bridgestone Tire Company Limited: *See*—
Sumikawa, Yasushi; Seitoh, Hisao; and Kuroda, Masahiro, 4,385,654, Cl. 152-209.00R.

Briefer, Dennis K., to Setra Systems, Inc. Linear capacitive sensor system. 4,386,312, Cl. 324-60.00C.

Brienza, Michael J.; and Totino, Peter J., to Singer Company, The. Single actuator control of multiple sewing instrumentalities. 4,385,573, Cl. 112-158.00E.

Briez, Pierre R.: *See*—
Ricaud, Jean-Louis; Briez, Pierre R.; and Sajot, Pierre, 4,386,280, Cl. 307-145.000.

British Aerospace Public Limited Company: *See*—
Abbott, Adrian, 4,385,489, Cl. 60-39.060.

Brittain, David R.; and Wood, Robin, to Imperial Chemical Industries PLC. Spiro [imidazolidine 4,3'-indoline]2,2',5-triones, compositions and use. 4,386,100, Cl. 424-273.00R.

Britton, Leon R.: *See*—
Watts, Roger E.; and Britton, Leon R., 4,386,330, Cl. 335-167.000.

Broadt, David R., to GTE Products Corporation. Vacuum-formed housing array. 4,385,888, Cl. 431-359.000.

Broecker, Franz J.: *See*—
Merger, Franz; Miesen, Ernest; Broecker, Franz J.; Schroeder, Wolfgang; Baer, Karl; Paetsch, Juergen; and Hupfer, Leopold, 4,386,018, Cl. 252-465.000.
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Brooks, Richard J., to Chemithon Corporation, The. Introduction of alcohol-water mixture into gasoline-operated engine. 4,385,593, Cl. 123-1.00A.

Brooks, Richard L.: *See*—
United States of America, National Aeronautics and Space Administration; Nishioka, Kenji; Nibley, David A.; Jeffers, Eldon L.; and Brooks, Richard L., 4,386,157, Cl. 435-39.000.

Brooktronics Engineering Corporation: *See*—
Gaston, David E., 4,385,968, Cl. 204-36.000.

Brother Kogyo Kabushiki Kaisha: *See*—
Yanagi, Toshiaki, 4,385,570, Cl. 112-121.120.

Brown, Arthur K., to Bendix Corporation, The. Hydraulic brake booster. 4,385,547, Cl. 91-384.000.

Brown, Donald J., to Knox Manufacturing Co. Illuminated transparency viewing system with overlay device and film clips. 4,385,462, Cl. 40-361.000.

Brown, Paul F., Jr.; Dobek, Louis J.; and Slayton, Richard M., to United Technologies Corporation. Roller bearing and construction thereof. 4,385,788, Cl. 308-187.000.

Brunson, Welton K.: *See*—
Hubbard, Vance M.; and Brunson, Welton K., 4,385,950, Cl. 156-73.100.

Brustle, Klaus; and Rock, Erich. Adjustable furniture hinge. 4,385,416, Cl. 16-249.000.

Brustle, Klaus: *See*—
Rock, Erich; and Brustle, Klaus, 4,385,417, Cl. 16-288.000.

Bryson, Clayton J.: *See*—
Bryson, Jeffrey C.; Bryson, Clayton J.; and Bryson, Robert C., 4,385,470, Cl. 49-63.000.

Bryson, Jeffrey C.; Bryson, Clayton J.; and Bryson, Robert C. Insulated pocket window. 4,385,470, Cl. 49-63.000.

Bryson, Robert C.: *See*—
Bryson, Jeffrey C.; Bryson, Clayton J.; and Bryson, Robert C., 4,385,470, Cl. 49-63.000.

Bubanko, Vladimir, to Compagnie Generale d'Electricite. Fibre-to-fibre connector including a component for joining it to an optical cable. 4,385,801, Cl. 350-96.210.

Buchel, Karl H.: *See*—
Kranz, Eckart; Kramer, Wolfgang; Buchel, Karl H.; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,386,088, Cl. 424-245.000.

Bucher-Guyer AG: *See*—
Hartmann, Eduard, 4,385,557, Cl. 100-107.000.

Buchholz, Rainer: *See*—
Zodrow, Rudolf; Rosenberg, Heinz J.; and Buchholz, Rainer, 4,385,960, Cl. 156-568.000.

Buchner, Helmut: *See*—
Bernauer, Otto; and Buchner, Helmut, 4,385,726, Cl. 237-12.30C.

Buckminster, William F.; Covert, William J.; and Conyngham, Wilson Y., to Garvey Corporation. Article elevating apparatus with inclined roller carriers. 4,385,701, Cl. 209-598.000.

Bugianesi, Robert L.: *See*—
Ponpipom, Mitree M.; Bugianesi, Robert L.; Robbins, James C.; and Shen, Tsung-Ying, 4,386,026, Cl. 260-112.50R.

Buketov, Evnei A.: *See*—
Abishev, Dzhantore N.; Buketov, Evnei A.; Baltynova, Nazymkul; Malyshev, Vitaly P.; Oralov, Turabai A.; Sakpanov, Egizbai S.; Kobzhasov, Abubakir K.; and Orazalina, Kazken N., 4,386,061, Cl. 423-571.000.

Burbank, Max B.; Lomnes, Randy K.; Vrba, Jiri; and Fife, Alistair A., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Method and apparatus to compensate a gradiometer having first and second unwanted terms. 4,386,318, Cl. 324-244.000.

Burchette, Robert L., Jr. Apparatus for wrapping or producing cylindrical articles and method for same. 4,385,480, Cl. 53-399.000.

Buren, Lawrence L.: *See*—
Fancher, Llewellyn W.; Walker, Francis H.; and Buren, Lawrence L., 4,385,923, Cl. 71-87.000.

Burge, Charles T.: *See*—
Shaw, Timothy; and Burge, Charles T., 4,385,543, Cl. 84-298.000.

Burke Company, The: *See*—
Bennett, Steven B., 4,385,745, Cl. 249-41.000.

Burkey, Larry. Bow sight. 4,385,448, Cl. 33-265.000.

Burlington Industries, Inc.: *See*—
Pugh, Charles D., 4,386,426, Cl. 370-85.000.

Burmeister, Joachim: *See*—
Klein, Friedrich; Burmeister, Joachim; and Warming, Nils, 4,385,813, Cl. 351-217.000.

Burroughs Corporation: *See*—
Chadra, David P., 4,386,415, Cl. 364-900.000.
Holz, George E.; and Ogle, James A., 4,386,348, Cl. 340-714.000.

Burt, John H.: *See*—
Iverson, Jacob E., 4,385,640 Cl. 137-117.000.

Busby, Bruce E.: *See*—
Smith, Grant M.; Perry, Vinson R.; and Busby, Bruce E., 4,386,379, Cl. 360-72.300.

Busching, Forrest B.: *See*—
Parrick, C. Earl; and Busching, Forrest B., 4,385,912, Cl. 55-329.000.

Butler, Donald E.; and Nordin, Ivan C., to Warner-Lambert Company. 4-Lower alkyl-3-phenoxypyridine-1-oxide and a method for its production. 4,386,094, Cl. 424-263.000.

Byers, Charles H.: *See*—
Berger, Michael; Byers, Charles H.; and Magenheimer, John J., 4,386,151, Cl. 430-228.000.

Byrd, Fred: *See*—
Compton, Thomas A.; and Byrd, Fred, 4,385,945, Cl. 148-156.000.

C. I. Kasei Co., Ltd.: *See*—
Yoshioka, Yoshihiro; Harima, Hiroshi; and Nishimura, Motokazu, 4,386,172, Cl. 523-408.000.

Cahen, David: *See*—
Hodes, Gary; Manassen, Joost; and Cahen, David, 4,386,142, Cl. 429-111.000.

Cale, David B., to Dadant & Sons Inc. Separator for honey and wax. 4,385,990, Cl. 210-187.000.

Callahan, Kenneth P.; DiGiacomo, Peter M.; and Dines, Martin B., to Occidental Research Corporation. Hydroformylation process utilizing novel catalyst. 4,386,013, Cl. 252-431.00P.

Camenisch, Hans; Bachner, Jarmila; and Berg, Wolfgang F., to Elfotec A.G. Process for improving the photoelectric properties of a laminated charge image carrier. 4,386,148, Cl. 430-131.000.

Camloc Industrial Fixings (UK) Limited: *See*—
Bellamy, Roger, 4,385,851, Cl. 403-406.000.

Camoga S.a.S. di Mascetti Attilio & C.: *See*—
Maspero, Carlo, 4,385,712, Cl. 221-13.000.

Camosso, Mario, to Ing. C. Olivetti & C., S.p.A. Cartridge for a typewriter correction ribbon. 4,385,848, Cl. 400-208.000.

Campbell, Bruce D.; and Chapman, Lynn O., to Raychem Corporation. Method for use in making a selectively vapor deposition coated tubular article, and product made thereby. 4,385,645, Cl. 138-139.000.

Campbell, Karen J.; and Evans, Jack L., to Minnesota Mining and Manufacturing Company. Stable silicone-coated release liner for pressure-sensitive adhesive sheets. 4,386,135, Cl. 428-447.000.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See*—
Burbank, Max B.; Lomnes, Randy K.; Vrba, Jiri; and Fife, Alistair A., 4,386,318, Cl. 324-244.000.

Canada Wire and Cable Limited: *See*—
Vokey, David E., 4,386,231, Cl. 174-115.000.

Canard, Pierre: *See*—
Artur, Andre; Dehut, Alain; and Canard, Pierre, 4,386,169, Cl. 523-200.000.

Candia, Albert F.: *See*—
McGrath, John F.; and Candia, Albert F., 4,385,459, Cl. 40-124.400.

Canevari, Gerard P., to Exxon Research and Engineering Co. Composition and method for suppressing vapor loss of volatile hydrocarbons. 4,386,052, Cl. 422-42.000.

Canon Kabushiki Kaisha: *See*—
Itoh, Masayuki, 4,385,826, Cl. 355-14.0FU.
Kanbe, Junichiro, 4,385,822, Cl. 355-3.00R.
Nakahata, Kimio; Tanigawa, Koichi; Adachi, Hiroyuki; and Watanabe, Tsuyoshi, 4,385,829, Cl. 355-3.0DD.
Takimoto, Hiroyuki; and Ushiro, Tatsuzo, 4,386,376, Cl. 358-335.000.

Cantoni, Giulio L.: *See*—
Chiang, Peter K.; Cantoni, Giulio L.; and Montgomery, John A., 4,386,093, Cl. 424-256.000.

Cantrell, George T., to Cantrell Machine Co., Inc. Chicken deboning apparatus and method. 4,385,419, Cl. 17-11.000.

Cantrell Machine Co., Inc.: *See*—
Cantrell, George T., 4,385,419, Cl. 17-11.000.

Capawana, Ross. Method and apparatus for delivering coins to coin-wrapping machines. 4,385,481, Cl. 53-461.000.

Cappel, Klaus L., to Wyle Laboratories. Compact shake mechanism. 4,385,524, Cl. 73-663.000.

Carl, Stewart: *See*—
Eberhardt, Noel; and Carl, Stewart, 4,386,254, Cl. 200-339.000.

Carle, Arthur. Insecticidal natural bait composition and method of using same. 4,386,071, Cl. 424-127.000.

Carlisle Corporation: *See*—
Freeman, Bruce A., 4,385,706, Cl. 215-225.000.

Carmer, Richard V.: *See*—
Saunders, Hollis S.; Carmer, Richard V.; and Payette, Lionel J., 4,385,435, Cl. 29-596.000.
Saunders, Hollis S.; Carmer, Richard V.; and Payette, Lionel J., 4,385,436, Cl. 29-596.000.
Saunders, Hollis S.; Carmer, Richard V.; and Payette, Lionel J., 4,385,437, Cl. 29-596.000.

Carmichael, Floyd W., to Air Conditioning Corporation. High pressure condensate return apparatus and method and system for using the same. 4,385,908, Cl. 55-39.000.

Caronna, Cosimo: *See*—
Perrone, Terrence J.; Bolton, Theodore S.; and Caronna, Cosimo, 4,385,504, Cl. 62-259.100.

Carrier Corporation: *See*—
Leonard, Gary S., 4,385,658, Cl. 165-11.000.
Perrone, Terrence J.; Bolton, Theodore S.; and Caronna, Cosimo, 4,385,504, Cl. 62-259.100.

Carver, Robert J.: *See*—
Welsch, John H.; and Carver, Robert J., 4,385,781, Cl. 294-161.000.

Case, Steven K., to University of Minnesota, The Regents of the. Data processing system utilizing a holographic optical element. 4,386,414, Cl. 364-826.000.

Casinelli, Dominic L., deceased. Portable stove. 4,385,619, Cl. 126-9.00B.

Casio Computer Company, Ltd.: *See*—
Ito, Hisashi, 4,386,412, Cl. 364-710.000.

Cass, John F.: *See*—
Grancio, Michael R.; Stewart, David F.; and Cass, John F., 4,386,187, Cl. 525-96.000.
Grancio, Michael R.; Stewart, David F.; and Cass, John F., 4,386,188, Cl. 525-96.000.

Castonguay, Roger N., to General Electric Co. Shield assembly for 800 to 1600 ampere circuit breaker compartments. 4,386,246, Cl. 200-50.0AA.

Casull, Richard J. Floating firing pin for small revolver. 4,385,463, Cl. 42-65.000.

Casull, Richard J. Mounting of barrell and action to rifle stock. 4,385,464, Cl. 42-75.00C.

Caterpillar Tractor Co.: *See*—
Eilers, Melvin L.; and Englund, Michael S., 4,385,910, Cl. 55-90.000.
Olt, Arthur E., Jr., 4,385,673, Cl. 180-9.500.

Cederbaum, Jerzy H. Silent-running internal combustion motor power unit. 4,385,678, Cl. 181-204.000.

Celanese Corporation: *See*—
Gerberich, H. Robert; and Smith, Eldred T., 4,386,014, Cl. 252-443.000.

Cella, James A., to General Electric Company. Method for making keto acids and dione cyclics obtained therefrom. 4,386,222, Cl. 568-346.000.

Central Glass Company Limited: *See*—
Kawai, Toshikazu; Maruyama, Yutaka; Negishi, Junji; and Negishi, Akira, 4,386,223, Cl. 568-411.000.

Cereda, Enzo; Donetti, Arturo; del Soldato, Piero; and Bergamaschi, Mario, to Istituto de Angeli S.p.A. Imidazolylphenyl amidines, pharmaceutical compositions containing same and use thereof. 4,386,099, Cl. 424-273.00R.

Chadra, David P., to Burroughs Corporation. Compare logic circuit for train printer-data link processor. 4,386,415, Cl. 364-900.000.

Champion International Corporation: *See*—
Dutcher, Dan, 4,385,687, Cl. 206-45.140.

Champlin, Bruce E.; and Manthey, David M. Packaging block for cylindrical articles. 4,385,695, Cl. 206-443.000.

Chan, May L.: *See*—
Reed, Russell, Jr.; Chan, May L.; and Stanton, Horace D., 4,385,948, Cl. 149-19.500.

Chang, Yun F., to Ford Motor Company. Hot melt corrosion resistant compositions containing epoxy resins. 4,386,173, Cl. 523-453.000.

Channin, Donald J., to RCA Corporation. Liquid crystal lens display system. 4,385,805, Cl. 350-334.000.

Chapman, Lynn O.: *See*—
Campbell, Bruce D.; and Chapman, Lynn O., 4,385,645, Cl. 138-139.000.

Chauvel, Bernard, to Rhone-Poulenc Industries. Non-woven fabrics and in particular cloths for hygiene use. 4,386,131, Cl. 428-288.000.

Check, Frank T., Jr.; and Sansone, Ronald P., to Pitney Bowes Inc. Apparatus and method for generating images by producing light spots of different sizes. 4,386,272, Cl. 250-236.000.

Chemcut Corporation: *See*—
Brady, Joseph M.; Cordes, Franz R.; Gedrat, Klaus H.; Goffredo, Daniel L.; Meyer, Walter; and Shakley, Conrad D., 4,385,967, Cl. 204-27.000.

Chemical Sciences, Inc.: *See*—
Kapiloff, Anita G.; and Hatch, Randolph T., 4,386,005, Cl. 252-180.000.

Chemische Werke Huls A.G.: *See*—
Muller, Wolfgang H. E.; and Kaufhold, Manfred, 4,385,965, Cl. 203-75.000.
Panoch, Hans J.; Scholten, Heinz; and Feldmann, Rainer, 4,386,197, Cl. 528-324.000.

Chemithon Corporation, The: *See*—
Brooks, Richard J., 4,385,593, Cl. 123-1.00A.

Chen, Michael J.: *See*—
Feder, Harold M.; and Chen, Michael J., 4,386,009, Cl. 252-428.000.

Chesarek, Donald J., to International Business Machines Corporation. Method for operating a transaction execution system having improved verification of personal identification. 4,386,266, Cl. 235-380.000.

Chevron Research Company: *See*—
Hutchison, Stanley O., 4,385,663, Cl. 166-378.000.
Hutchison, Stanley O., 4,385,664, Cl. 166-382.000.
Rosenthal, Joel W.; and Wallman, P. Henrik, 4,385,983, Cl. 208-11.00R.

Chiang, David; Chu, Mosi; and Manber, Solomon, to Amtech Patent Licensing Corporation. Clock generator. 4,386,271, Cl. 250-234.000.

Chiang, Peter K.; Cantoni, Giulio L.; and Montgomery, John A., to United States of America, Health and Human Services. (±)3-Deazaaristeromycin and uses. 4,386,093, Cl. 424-256.000.

Chiaretti, Guido: *See*—
Basola, Carlo P.; and Chiaretti, Guido, 4,385,800, Cl. 350-96.200.

Chiba, Takehisa: *See*—
Iwao, Junichi; Oya, Masayuki; Baba, Toshio; Iso, Tadashi; and Chiba, Takehisa, 4,386,096, Cl. 424-270.000.

Chien, Ta-Mu, to Bell Telephone Laboratories, Incorporated. Multifrequency tone detector. 4,386,239, Cl. 179-84.0VF.

Child, Francis W., to Child Laboratories Inc. Teat dilator. 4,385,633, Cl. 604-104.000.

Child Laboratories Inc.: *See*—
Child, Francis W., 4,385,633, Cl. 604-104.000.

Christensen, Burton G.; and DiNinno, Frank P., to Merck & Co., Inc. Process for preparing 6-(1'-hydroxyethyl)-2-substituted-pen-2-em-3-carboxylic acid. 4,386,030, Cl. 260-245.20R.

Christensen, Ronald L.: *See*—
McGinley, Charles M.; Schamber, Arlen R.; Melin, Denny L.; Christensen, Ronald L.; Tazzia, Edward K.; Hackbarth, Richard W.; Fogarty, Terry M.; and Faint, Richard C., 4,385,987, Cl. 210-150.000.

Christensen, Roy M.: *See*—
Gibson, Walter G.; and Christensen, Roy M., 4,386,434, Cl. 455-37.000.

Christiaen, Lucien A.: *See*—
De Roeck, Joseph I.; Blondeel, Eric J.; and Christiaen, Lucien A., 4,385,716, Cl. 226-18.000.

Christiansen, Hans-Martin, to Siemens Aktiengesellschaft. Broad band telecommunication system. 4,386,424, Cl. 370-4.000.

Chu, Mosi: *See*—
Chiang, David; Chu, Mosi; and Manber, Solomon, 4,386,271, Cl. 250-234.000.

Chu, Shao-Fu; Ho, Allen P.; Horng, Cheng T.; and Kemlage, Bernard M., to International Business Machines Corp. Method of forming wide, deep dielectric filled isolation trenches in the surface of a silicon semiconductor substrate. 4,385,975, Cl. 204-192.00E.

Ciba-Geigy AG: *See*—
Mason, Leslie F. A.; Kitzing, Rainer; Whitear, Brian R. D.; Long, William E.; Wood, Glenn P.; and Reeves, David L. R., 4,386,149, Cl. 430-213.000.
Mockli, Peter, 4,385,900, Cl. 8-471.000.

Ciba-Geigy Corporation: *See*—
Boger, Manfred; and Drabek, Jozef, 4,386,102, Cl. 424-304.000.
Drabek, Jozef; and Boger, Manfred, 4,386,101, Cl. 424-285.000.
Eldin, Sameer H.; and Grieshaber, Peter, 4,386,192, Cl. 526-218.000.
Podder, Nitya G., 4,385,901, Cl. 8-527.000.
Rajappa, Srinivasachari; and Sudarsanam, Vasudevan, 4,386,097, Cl. 424-270.000.
Rasberger, Michael, 4,386,204, Cl. 546-21.000.

Ciecluch, Ronald F.: *See*—
Locatell, Louis, Jr.; Rogers, Howard G.; Bilofsky, Ruth C.; Ciecluch, Ronald F.; and Zepp, Charles M., 4,386,216, Cl. 549-394.000.

Cimarusti, Christopher M.: *See*—
Floyd, David M.; Fritz, Alan W.; and Cimarusti, Christopher M., 4,386,034, Cl. 260-456.00A.

Ciprios, George: *See*—
Skopp, Alvin; Ciprios, George; and Batzold, John S., 4,385,970, Cl. 204-108.000.

Circle Games: *See*—
Munn, J. Knox; Roberts, Thomas; and Stocker, Curtis L., 4,385,765, Cl. 273-253.000.

Citizen Watch Co., Ltd.: *See*—
Karasawa, Setsuyuki; Aso, Minosaku; Goto, Yoshinori; and Nikaido, Akira, 4,386,287, Cl. 310-49.00R.

Clark, Alexander B., Jr. Folding seat structure. 4,385,782, Cl. 297-230.000.

Clark, Frank, to Tantera, Inc. Angle broom. 4,385,411, Cl. 15-160.000.

Clark, Robert W.: *See*—
Narveson, Parm L.; Clark, Robert W.; and Hannert, Lawrence C., 4,386,345, Cl. 340-703.000.

Clauer, Arlen E.; and Franks, Jeffrey G., to Autotrol Corporation. Water softener control. 4,385,992, Cl. 210-662.000.

Clevely, Robert E., to Lukens, Inc. Agglomeration method. 4,385,928, Cl. 75-3.000.

Clifford, Earl W.: *See*—
Sorce, Peter S.; and Clifford, Earl W., 4,385,517, Cl. 73-38.000.

Clinton, James R., to Huntron Instruments, Inc. Apparatus for testing, in-circuit, semiconductors shunted by a low resistance. 4,386,317, Cl. 324-158.00D.

Cloud, Charles E.: *See*—
Cloud, David A.; Cloud, Charles E.; Pearson, William N.; and Hartman, Donn A., 4,385,882, Cl. 425-91.000.

Cloud Corporation: *See*—
Cloud, David A.; Cloud, Charles E.; Pearson, William N.; and Hartman, Donn A., 4,385,882, Cl. 425-91.000.

Cloud, David A.; Cloud, Charles E.; Pearson, William N.; and Hartman, Donn A., to Cloud Corporation. Apparatus for manufacture of candy. 4,385,882, Cl. 425-91.000.

Coburn, Joseph W., Jr. Article of manufacture and methods of manufacturing. 4,386,123, Cl. 428-29.000.

Cody, Charles A.: *See*—
Reichert, William W.; Cody, Charles A.; and Youngken, Carle H., 4,386,059, Cl. 423-307.000.

Cogswell, Frederic N.; Griffin, Brian P.; and Rose, John B., to Imperial Chemical Industries Limited. Compositions of melt-processable polymers having improved processability. 4,386,174, Cl. 524-27.000.

Cohen, Stuart C., to General Electric Company. Flame-retarded thermoplastic polyester compositions having improved arc resistance and process for preparing same. 4,386,027, Cl. 523-210.000.

Colbourne, Robert, to Easams Limited. Movable targets. 4,385,767, Cl. 273-359.000.

Cole, Mark T.: *See*—
Sherman, Charles F.; Cole, Mark T.; and Nielsen, Heimar, 4,385,744, Cl. 248-551.000.

Collins, Bobby W. Universal reaction plate. 4,385,533, Cl. 81-57.390.

Collins, Thomas W.; and Hurley, Michael G., to International Business Machines Corporation. High performance bubble chip architecture. 4,386,417, Cl. 365-12.000.

Colwell, John C.: *See*—
Koford, Stuart K.; Colwell, John C.; and Simon, Alexander D., 4,385,793, Cl. 339-61.00R.

Comano S.A.: *See*—
Schwartz, Roland, 4,385,762, Cl. 273-1.0GC.

Combustion Engineering, Inc.: *See*—
Humphries, Joseph R.; and Knapp, Richard W., 4,386,048, Cl. 376-216.000.
Tedder, Joseph A., 4,385,535, Cl. 82-4.00R.

Commissariat a l'Energie Atomique: *See*—
Ricaud, Jean-Louis; Briez, Pierre R.; and Sajot, Pierre, 4,386,280, Cl. 307-145.000.

Communications Patents Limited: *See*—
Gargini, Eric J., 4,386,365, Cl. 358-85.000.

Compagnie Generale d'Electricite: *See*—
Bubanko, Vladimir, 4,385,801, Cl. 350-96.210.

Compagnie Industrielle des Telecommunications Cit-Alcatel: *See*—
Albertin, Michel; and Lavorel, Lucien, 4,385,641, Cl. 137-636.100.

Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme): *See*—
Desserre, Jacques; Helle, Michel; and Lazzari, Jean-Pierre, 4,386,383, Cl. 360-126.000.

Compton, Thomas A.; and Byrd, Fred, to Armco Inc. Lift-off means and method for use with a horizontal continuous hearth roll furnace for the treatment of metallic strip. 4,385,945, Cl. 148-156.000.

Conoco Inc.: *See*—
Anderson, Ardis L., 4,385,982, Cl. 208-11.0LE.
Sooter, Matthew C., 4,385,980, Cl. 208-8.0LE.
Conrad, Willibrod; and Jungmann, Karl-Heinz, to Lucas Industries Limited. Drum brakes having automatic adjusters. 4,385,681, Cl. 188-79.50B.
Consiglio Nazionale Delle Ricerche: *See*—
Quaglia, Giovanni B.; and Massacci, Angelo, 4,386,161, Cl. 435-269.000.
Container Corporation of America: *See*—
Goguen, George J., 4,385,698, Cl. 206-586.000.
Olsen, Robert C.; and Jensen, James R., 4,385,721, Cl. 229-32.000.
Conyngham, Wilson Y.: *See*—
Buckminster, William F.; Covert, William J.; and Conyngham, Wilson Y., 4,385,701, Cl. 209-598.000.
Cooper Industries, Inc.: *See*—
Lovrenich, Rodger T., 4,385,791, Cl. 339-17.00C.
Copco, Inc.: *See*—
Lebowitz, Sam, 4,385,585, Cl. 116-67.00R.
Cope, Bernard; Lynch, Kenneth R.; O'Donnell, Daniel H.; Rodell, John T.; Turechek, William W.; and Unterberger, Robert M., to International Business Machines Corp. Reset of a selected I/O channel and associated peripheral equipment by means independent of the channel. 4,386,400, Cl. 364-200.000.
Copeland Corporation: *See*—
Anderson, Robert L., 4,385,872, Cl. 417-571.000.
Corbett, David F., to Beecham Group Limited. Process for the preparation of antibiotics. 4,386,029, Cl. 260-245.20T.
Corbin, Richard W. Fork lift attachment. 4,385,860, Cl. 414-420.000.
Corboy, John F.: *See*—
Berkman, Samuel; and Corboy, John F., 4,386,255, Cl. 219-10.49R.
Cordes, Franz R.: *See*—
Brady, Joseph M.; Cordes, Franz R.; Gedrat, Klaus H.; Goffredo, Daniel L.; Meyer, Walter; and Shakley, Conrad D., 4,385,967, Cl. 204-27.000.
Cornell Research Foundation, Inc.: *See*—
Gibson, Gary E.; and Peterson, Christine J., 4,386,095, Cl. 424-263.000.
Webb, Watt W.; and Frish, Michael B., 4,385,830, Cl. 356-28.000.
Corning Glass Works: *See*—
Beall, George H., 4,386,162, Cl. 501-3.000.
Blaszyk, Paul E.; and Olshansky, Robert, 4,385,802, Cl. 350-96.330.
Cosman, Eric R. Telemetric differential pressure sensor with the improvement of a conductive shorted loop tuning element and a resonant circuit. 4,385,636, Cl. 128-748.000.
Costales, Manuel; and Hakki, Moustafa I. Controlled ring drive. 4,385,487, Cl. 57-105.000.
Costerousse, Germain: *See*—
Teutsch, Jean G.; Costerousse, Germain; Philibert, Daniel; and Deraedt, Roger, 4,386,085, Cl. 424-238.000.
Couat, Serge, to Societe Anonyme DBA. Tire pressure pick-up. 4,386,247, Cl. 200-61.250.
Covert, William J.: *See*—
Buckminster, William F.; Covert, William J.; and Conyngham, Wilson Y., 4,385,701, Cl. 209-598.000.
Cox, Charles E.: *See*—
Wolf, E. George, Jr.; and Cox, Charles E., 4,385,629, Cl. 128-207.140.
Coyle, Richard W.: *See*—
Rasala, Edward; Wallach, Steven; Alsing, Carl J.; Holberger, Kenneth D.; Holland, Charles J.; West, Thomas; Guyer, James M.; Coyle, Richard W.; Ziegler, Michael L.; and Druke, Michael B., 4,386,399, Cl. 364-200.000.
CR Industries: *See*—
Reichenbach, Jerry D.; and Passarelli, Jamie R., 4,386,047, Cl. 264-334.000.
Crain Enterprises, Inc.: *See*—
Crain, Stephen B., 4,385,849, Cl. 403-109.000.
Crain, Stephen B., to Crain Enterprises, Inc. Extensible and retractable rod. 4,385,849, Cl. 403-109.000.
Crankshaw, John H., to Dynetics, Inc. Method of manufacturing a clutch plate. 4,385,429, Cl. 29-434.000.
Creed, Gerald J.; and Odermann, Charles R., to Singer Company, The. Thread guiding and hold-down pawl for bobbin winding mechanism of a sewing machine. 4,385,574, Cl. 112-184.000.
Creusot-Loire: *See*—
Leroy, Pierre J.; Deschamps, Maurice; and Sprunck, Emile, 4,385,753, Cl. 266-268.000.
Crisp, Donald E.: *See*—
Link, William T.; Fritsche, Joel L.; and Crisp, Donald E., 4,385,515, Cl. 72-416.000.
Croda Synthetic Chemicals Limited: *See*—
Adey, Kenneth A.; Yates, Frank S.; and Young, John H., 4,386,226, Cl. 568-804.000.
Crossley, Neville S.; Glen, Alasdair T.; and Hughes, Leslie R., to Imperial Chemical Industries Limited. Anti-androgenic amide derivative. 4,386,080, Cl. 424-209.000.
Cselt - Centro Studi e Laboratori Telecomunicazioni S.p.A.: *See*—
Basola, Carlo P.; and Chiaretti, Guido, 4,385,800, Cl. 350-96.200.
Belforte, Piero; Bostica, Bruno; and Pilati, Luciano, 4,386,425, Cl. 370-66.000.
Cullen, William P.: *See*—
Zoleski, Benjamin H.; Sung, Rodney L.; and Cullen, William P., 4,386,001, Cl. 252-32.70E.
Cummins Engine Company, Inc.: *See*—
Shaw, Terrence M., 4,385,595, Cl. 123-41.840.
Curry, John J. Tamper proof lid. 4,385,708, Cl. 215-256.000.
Custom Tapes Inc.: *See*—
Palmeri, Joseph J., 4,385,465, Cl. 43-58.000.
Cutler, Scott E.; and Eichelberger, Charles W., to General Electric Company. Method of, and apparatus for, increased resolution slewing of a bar-graph-display data input/output system. 4,386,347, Cl. 340-712.000.
Cutler, Timothy D.; and Titus, Theodore, IV, to Lanier Business Products, Inc. Time independent controller for cassette changing apparatus. 4,386,382, Cl. 360-92.000.
Cutter Laboratories, Inc.: *See*—
Jordan, Robert E., 4,386,025, Cl. 260-112.00B.
Mitra, Gautam; and Lundblad, John L., 4,386,068, Cl. 424-101.000.
D.O.V.E. Equipment Corporation: *See*—
Boettcher, William C., 4,385,713, Cl. 221-75.000.
Dabrowiecki, Zbigniew M.: *See*—
Horrocks, Lloyd A.; Dorman, Robert V.; and Dabrowiecki, Zbigniew M., 4,386,078, Cl. 424-180.000.
Dadant & Sons Inc.: *See*—
Cale, David B., 4,385,990, Cl. 210-187.000.
Daenen, Robert H. C. M.; and Jan De Coster, Pieter K., to Dart Industries Inc. Storage and serving dish for cheese. 4,385,554, Cl. 99-645.000.
Daiker, Artur L.; Veis, Anatoly I.; Bogatyrev, Anatoly D.; Kochengin, Evgeny Y.; Palko, Viktor N.; Novoselov, Nikolai M.; Volchematiev, Jury V.; and Morozov, Gennady Y. Method and apparatus for producing a molten puddle during scarfing. 4,385,941, Cl. 148-9.500.
Daimler-Benz Aktiengesellschaft: *See*—
Bernauer, Otto; and Buchner, Helmut, 4,385,726, Cl. 237-12.30C.
Dainippon Screen Seizo Kabushiki Kaisha: *See*—
Yamada, Mitsuhiko, 4,386,267, Cl. 250-226.000.
Daitoku, Koichi, to Nippon Kogaku K. K. Motor drive device for a long film. 4,385,735, Cl. 242-71.100.
Daly, Charles F.: *See*—
Gulliksen, John E.; Guimond, Roy A.; and Daly, Charles F., 4,386,391, Cl. 362-232.000.
Damico, Frank M., to Joerns Furniture Company. Caster for adjustable beds and the like. 4,385,414, Cl. 16-35.00R.
Dana Corporation: *See*—
Sowers, Eugene E., 4,385,677, Cl. 180-254.000.
Dancy, William B.; and Nichols, Kenneth L., to International Minerals & Chemical Corp. Granulation of potash salts. 4,385,920, Cl. 71-36.000.
Daniel Industries, Inc.: *See*—
Tomlin, Jerry B.; and Hodgeman, Herbert H., 4,385,746, Cl. 251-56.000.
Danz, Peter, to Lamaf-Kunststoffen B.V. Speculum for medical examination with a noiseless mechanical locking mechanism. 4,385,626, Cl. 128-17.000.
Dart Industries Inc.: *See*—
Daenen, Robert H. C. M.; and Jan De Coster, Pieter K., 4,385,554, Cl. 99-645.000.
Data General Corporation: *See*—
Rasala, Edward; Wallach, Steven; Alsing, Carl J.; Holberger, Kenneth D.; Holland, Charles J.; West, Thomas; Guyer, James M.; Coyle, Richard W.; Ziegler, Michael L.; and Druke, Michael B., 4,386,399, Cl. 364-200.000.
Data Technology, Inc.: *See*—
Ezekiel, Frederick D., 4,386,270, Cl. 250-231.0SE.
Davidson, Samuel L., to Mastercrafters Corporation. Marine door unit. 4,385,580, Cl. 114-201.00R.
Dayco Corporation: *See*—
Vitellaro, Frank A., 4,385,426, Cl. 29-33.00T.
Deere & Company: *See*—
Hauser, Herbert J., Jr., 4,385,594, Cl. 123-41.290.
Deetman, Gerbrand, to Monsanto Company. Color stabilization of monoalkyl phenols. 4,386,224, Cl. 568-703.000.
de Graaf, Theodorus F. M.; and Geersheuvels, Charles H., to Stamicarbon B.V. Process for the preparation of C-substituted pyridines and/or hydrogenated C-substituted pyridines, quinolines and/or hydrogenated quinolines. 4,386,207, Cl. 546-164.000.
Dehut, Alain: *See*—
Artur, Andre; Dehut, Alain; and Canard, Pierre, 4,386,169, Cl. 523-200.000.
Delalande S.A.: *See*—
Moinet, Gerard H.; Dostert, Philippe L.; and Bourgery, Guy R., 4,386,090, Cl. 424-248.400.
Delaware City Plastics Corporation: *See*—
Ackerman, Alfred J.; and Lull, David L., 4,386,189, Cl. 525-358.000.
del Soldato, Piero: *See*—
Cereda, Enzo; Donetti, Arturo; del Soldato, Piero; and Bergamaschi, Mario, 4,386,099, Cl. 424-273.00R.
De Luca, Paul V.; Neuwirth, Helmut; and Oddsen, Robert, to Porta Systems Corp. Telephone test shoe having resilient latching means. 4,386,243, Cl. 179-175.10R.
De Maayer, Petrus J.: *See*—
Van Landeghem, Willy K.; De Maayer, Petrus J.; Loots, Francois P.; Pattyn, Hendrik A.; Bauer, Walter; Farber, Heinrich; Muller, Jurgen; and Schmidt, Manfred, 4,386,431, Cl. 378-187.000.
Denki Onkyo Co., Ltd.: *See*—
Kohzuki, Keiji; and Yoshida, Tsuneo, 4,386,331, Cl. 335-211.000.
Denny, Dann W.; Hilty, Ronald L.; and Thompson, Paige W., to General Electric Company. Defrost control device and method of operating such. 4,385,502, Cl. 62-155.000.

Deraedt, Roger: *See*—
Teutsch, Jean G.; Costerousse, Germain; Philibert, Daniel; and Deraedt, Roger, 4,386,085, Cl. 424-238.000.

De Roeck, Joseph J.; Blondeel, Eric J.; and Christiaen, Lucien A., to AGFA-Gevaert N.V. Web controlling apparatus. 4,385,716, Cl. 226-18.000.

Deschaaf, Clifford L.; and Getz, Edward H., to Whirlpool Corporation. Low voltage sensor for dryer. 4,385,452, Cl. 34-53.000.

Deschamps, Maurice: *See*—
Leroy, Pierre J.; Deschamps, Maurice; and Sprunck, Emile, 4,385,753, Cl. 266-268.000.

Desserre, Jacques; Helle, Michel; and Lazzari, Jean-Pierre, to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme). Magnetic transducer comprising a gap of variable larger dimension for reading and writing data present on a magnetic carrier. 4,386,383, Cl. 360-126.000.

Detroit Gasket: *See*—
Doerfling, Ralph G.; and Warner, Donald H., 4,385,955, Cl. 156-245.000.

Deutsch, Leslie J.: *See*—
Deutsch, Ralph; and Deutsch, Leslie J., 4,385,542, Cl. 84-1.230.

Deutsch, Ralph; and Deutsch, Leslie J., to Kawai Musical Instrument Mfg. Co., Ltd. Acoustic tone synthesizer for an electronic musical instrument. 4,385,542, Cl. 84-1.230.

Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V.: *See*—
Peschka, Walter, 4,386,309, Cl. 322-2.00R.

De Vincentiis, Leonardo, to Ausonia Farmaceutici S.R.L. Pharmaceutical compositions endowed with an antibacterial activity and their use in the treatment of infections due to gram-positive and gram-negative pathogens. 4,386,070, Cl. 424-114.000.

Diesel Kiki Company, Ltd.: *See*—
Okura, Eigi, 4,385,503, Cl. 62-180.000.

Dieter, William J. Apparatus for scoring glass sheets. 4,385,540, Cl. 83-886.000.

Dieterich, Dieter: *See*—
Rasshofer, Werner; Dieterich, Dieter; and Meyborg, Holger, 4,386,218, Cl. 564-38.000.

DiGiacomo, Peter M.: *See*—
Callahan, Kenneth P.; DiGiacomo, Peter M.; and Dines, Martin B., 4,386,013, Cl. 252-431.00P.

Dillan, George O., to International Business Machines Corporation. Universal electrical connection apparatus. 4,386,333, Cl. 336-107.000.

Dille, William A.; Erickson, Wayne E.; and Royer, Leon D., to Minnesota Mining and Manufacturing Company. Fly fishing line. 4,386,132, Cl. 428-372.000.

Dines, Martin B.: *See*—
Callahan, Kenneth P.; DiGiacomo, Peter M.; and Dines, Martin B., 4,386,013, Cl. 252-431.00P.

DiNinno, Frank P.: *See*—
Christensen, Burton G.; and DiNinno, Frank P., 4,386,030, Cl. 260-245.20R.

Dipl.-Ing. Bruno Richter: *See*—
Richter, Bruno; and Brand, Bernhard, 4,386,322, Cl. 328-63.000.

Dirks, Gregory: *See*—
Phillips, James W.; and Dirks, Gregory, 4,385,525, Cl. 73-720.000.

DiSalvo, Anthony L.; and Tsai, Chung-Chieh, to Stauffer Chemical Company. Compositions for forming poly(oxazolidone/urethane) thermosets and products therefrom. 4,386,191, Cl. 525-504.000.

Djordjevic, Ilija: *See*—
Straubel, Max; Schwartz, Reinhard; Ritter, Ernst; and Djordjevic, Ilija, 4,385,867, Cl. 417-63.000.

Dobbins, Michael S.; and Murtha, Marlyn J., to United States of America, Energy. Recovery of iron oxide from coal fly ash. 4,386,057, Cl. 423-138.000.

Dobek, Louis J.: *See*—
Brown, Paul F., Jr.; Dobek, Louis J.; and Slayton, Richard M., 4,385,788, Cl. 308-187.000.

Dr. C. Otto & Comp. G.m.b.H.: *See*—
Kwasnik, Hans-Jurgen; and Piduch, Hans-Gunter, 4,385,963, Cl. 202-263.000.

Dr. Johannes Heidenhain GmbH: *See*—
Schmitt, Walter, 4,385,836, Cl. 356-374.000.

Doerfling, Ralph G.; and Warner, Donald H., to Detroit Gasket. Method of forming contoured fiberglass sheet. 4,385,955, Cl. 156-245.000.

Dohi, Takashi: *See*—
Neki, Shigeo; Shinozaki, Nozomu; and Dohi, Takashi, 4,386,301, Cl. 318-318.000.

Doi, Yuzuru; and Kawamura, Noriaki. Laser power transmitting optical fiber damage detecting device. 4,385,832, Cl. 356-73.100.

Dolata, Hans; Meyle, Werner; Kaiser, Hans-Georg; Odenwald, Gerhard; and Weyda, Gunther, to Andreas Stihl. Sharpening device for a back-sharpened saw chain of a motor chain saw. 4,385,532, Cl. 76-25.00A.

Dondelewski, Michael A. Method of recovering and using fine coal. 4,385,995, Cl. 210-705.000.

Donetti, Arturo: *See*—
Cereda, Enzo; Donetti, Arturo; del Soldato, Piero; and Bergamaschi, Mario, 4,386,099, Cl. 424-273.00R.

Donner, Klaus: *See*—
Bitsch, Harald; Donner, Klaus; Horbach, Rainer; and Rump, Peter W., 4,385,562, Cl. 105-163.00R.

Doornink, Douglas J.: *See*—
Peterson, James R.; and Doornink, Douglas J., 4,386,367, Cl. 358-140.000.

Dorman, Robert V.: *See*—
Horrocks, Lloyd A.; Dorman, Robert V.; and Dabrowiecki, Zbigniew M., 4,386,078, Cl. 424-180.000.

Dostert, Philippe L.: *See*—
Moinet, Gerard H.; Dostert, Philippe L.; and Bourgery, Guy R., 4,386,090, Cl. 424-248.400.

Dovey, Anthony: *See*—
Turner, John C.; Dovey, Anthony; and MacGilp, Neil A., 4,386,000, Cl. 252-8.800.

Dow Chemical Company, The: *See*—
Harrington, Donald F., 4,386,006, Cl. 252-184.000.
Suh, Kyung W., 4,386,165, Cl. 521-79.000.

Dow Corning Corporation: *See*—
Monroe, Carl M., 4,386,170, Cl. 523-210.000.

Doyle, Richard C.; and Rivera, Lester, to Leviton Manufacturing Company, Inc. Remote control system. 4,386,338, Cl. 340-310.00A.

Drabek, Jozef; and Boger, Manfred, to Ciba-Geigy Corporation. Unsymmetrical bis-carbamates and their use for combating pests. 4,386,101, Cl. 424-285.000.

Drabek, Jozef: *See*—
Boger, Manfred; and Drabek, Jozef, 4,386,102, Cl. 424-304.000.

Draganov, Samuel M. Wet process and apparatus for rendering cellulosic insulation particles fire-retardant. 4,386,119, Cl. 427-212.000.

Drew Chemical Corporation: *See*—
Sexsmith, David R.; and Libutti, Bruce L., 4,386,008, Cl. 252-389.00R.

Drew, Prentis B.; and Nalos, Ervin J., to Boeing Company, The. System for determining the location of an airborne vehicle to the earth using a satellite-base signal source. 4,386,355, Cl. 343-112.00D.

Druke, Michael B.: *See*—
Rasala, Edward; Wallach, Steven; Alsing, Carl J.; Holberger, Kenneth D.; Holland, Charles J.; West, Thomas; Guyer, James M.; Coyle, Richard W.; Ziegler, Michael L.; and Druke, Michael B., 4,386,399, Cl. 364-200.000.

Dubois, Jean-Claude; and Mourgues, Gerard, to U.S. Philips Corporation. Light-emitting device coupled to an optical fibre. 4,385,797, Cl. 350-96.200.

DuCharme, Robert T.; and Herzog, Robert E., to Bendix Corporation, The. Pin slider disc brake. 4,385,680, Cl. 188-72.400.

Duer, Morris J. Reloading device for metallic firearm cartridges. 4,385,545, Cl. 86-28.000.

Dunleavy, Raymond A., III: *See*—
Pauls, Walter L.; and Dunleavy, Raymond A., III, 4,385,954, Cl. 156-244.210.

Dunn, Charles S.; and Seng, Stephen, to Owens-Corning Fiberglas Corporation. Method and apparatus for feeding raw material to an arc furnace. 4,385,918, Cl. 65-27.000.

Du Pont de Nemours, E. I., and Company: *See*—
Ainbinder, Zarah; and Parshall, George W., 4,386,217, Cl. 560-207.000.
Kachelries, Robert W., 4,385,821, Cl. 354-319.000.
Long, George R., 4,385,958, Cl. 156-361.000.
Samuelson, Harry V., 4,385,886, Cl. 425-464.000.

Durden, John A.: *See*—
Manning, David T.; and Durden, John A., 4,386,086, Cl. 424-244.000.

Duringer, Rudi: *See*—
Milles, Peter; and Duringer, Rudi, 4,385,509, Cl. 70-304.000.

Dutcher, Dan, to Champion International Corporation. Display carton and method. 4,385,687, Cl. 206-45.140.

Duzitall Equipment Corporation: *See*—
Ingalls, Edgar J., deceased; and Guidry, Eddie J., 4,385,422, Cl. 17-73.000.

Dwyer Instruments, Inc.: *See*—
Phillips, James W.; and Dirks, Gregory, 4,385,525, Cl. 73-720.000.

Dynapol: *See*—
Wingard, Robert E., Jr.; and Swanson, Sally A., 4,386,206, Cl. 546-76.000.

Dynetics, Inc.: *See*—
Crankshaw, John H., 4,385,429, Cl. 29-434.000.

Dysan Corporation: *See*—
James, Richard N.; and Goodale, Kenneth S., 4,385,587, Cl. 118-50.000.

E.C.H. Will (GmbH & Co.): *See*—
Wolf, Wolfram, 4,385,537, Cl. 83-100.000.

E. R. Squibb & Sons, Inc.: *See*—
Floyd, David M.; Fritz, Alan W.; and Cimarusti, Christopher M., 4,386,034, Cl. 260-456.00A.
Treuner, Uwe D.; and Breuer, Hermann, 4,386,199, Cl. 542-420.000.

Earley, Ronald L. Thermally and sonically insulating and weatherproofing cover for mobile homes. 4,385,474, Cl. 52-96.000.

Easams Limited: *See*—
Colbourne, Robert, 4,385,767, Cl. 273-359.000.

Eastman Kodak Company: *See*—
Gilmour, Hugh S. A., 4,386,145, Cl. 430-7.000.
Hyatt, John A.; and White, Alan W., 4,386,221, Cl. 568-28.000.
Kasper, George P.; Kroll, Arthur S.; and Mosehauer, Michael, 4,385,823, Cl. 355-3.00R.
Mignot, Andre G. E., 4,386,156, Cl. 430-567.000.

Eaton Corporation: *See*—
Hamilton, Martin W., 4,386,385, Cl. 361-253.000.
Holton, Robert J., 4,385,431, Cl. 29-525.000.

Eaton, Harry E.; and Novak, Richard C., to United Technologies Corporation. Co-spray abrasive coating. 4,386,112, Cl. 427-34.000.

Ebata, Shuji: *See*—
Nakamura, Tadasi; Osugi, Minoru; Obata, Yoriko; and Ebata, Shuji, 4,386,017, Cl. 252-463.000.

Eberhardt, Noel; and Carl, Stewart, to Timex Corporation. Rocker switch. 4,386,254, Cl. 200-339.000.

Eckels, Robert Y. Roadworkers safety trailer. 4,385,771, Cl. 280-400.000.

Edgington, Robert E. Tin, lead, zinc alloy. 4,386,051, Cl. 420-589.000.

Edwards, Ralston G., Jr.: *See*—
Goffredi, Albert S.; Lisi, John E.; and Edwards, Ralston G., Jr., 4,385,919, Cl. 65-109.000.

Eheim, Franz; Geiger, Wolfgang; and Stadler, Werner, to Robert Bosch GmbH. Fuel injection pump for internal combustion engines. 4,385,614, Cl. 123-506.000.

Ehrhart, Philip J.; and Haldeman, Peter P., to Sperry Corporation. Pivotable shields for disc mower-conditioner. 4,385,484, Cl. 56-320.100.

Ehrlich, Karl; Vaidya, Waman; and Schafer, Ludwig, to Kernforschungszentrum Karlsruhe GmbH. Highly heat resistant austenitic iron-nickel-chromium alloys which are resistant to neutron induced swelling and corrosion by liquid sodium. 4,385,933, Cl. 75-124.00C.

Ehrsam, William F.; Elander, Robert C.; Matyas, Stephen M.; Meyer, Carl H. W.; Powers, Robert L.; Prentice, Paul N.; Smith, John L.; and Tuchman, Walter L., to International Business Machines Corp. Cryptographic communication and file security using terminals. 4,386,234, Cl. 178-22.090.

Eichelberger, Charles W.: *See*—
Cutler, Scott E.; and Eichelberger, Charles W., 4,386,347, Cl. 340-712.000.

Eilers, Melvin L.; and Englund, Michael S., to Caterpillar Tractor Co. Apparatus and method for producing a gas having a controlled water vapor content. 4,385,910, Cl. 55-90.000.

Eisai Co., Ltd.: *See*—
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Kuwana, Noriaki; Abe, Shinya; and Yamada, Kouzi, 4,386,227, Cl. 568-875.000.

Ejiri, Takeshi; Tanaka, Seiichi; Kasai, Teruaki; Komatsuzaki, Masao; and Masuda, Satoru, to Nissan Motor Co., Ltd.; and Otsuka Koki Co., Ltd. Foot-operated parking brake lever assembly. 4,385,529, Cl. 74-535.000.

EKA Aktiebolag: *See*—
Svending, Per J.; Batelson, Per G.; Johansson, Hans E.; and Larsson, Hans M., 4,385,961, Cl. 162-175.000.

Elander, Robert C.: *See*—
Ehrsam, William F.; Elander, Robert C.; Matyas, Stephen M.; Meyer, Carl H. W.; Powers, Robert L.; Prentice, Paul N.; Smith, John L.; and Tuchman, Walter L., 4,386,234, Cl. 178-22.090.

Eldin, Sameer H.; and Grieshaber, Peter, to Ciba-Geigy Corporation. Process for the preparation of polymers of definite viscosities. 4,386,192, Cl. 526-218.000.

Eldridge, John D., Jr., to Instranetics, Inc. Surgical instrument tip protector and method of manufacture. 4,385,692, Cl. 206-363.000.

Electric Power Research Institute, Inc.: *See*—
Reichman, James M.; O'Hanlon, Thomas A.; and Kendrew, Thomas J., 4,385,667, Cl. 175-53.000.

Elfotec A.G.: *See*—
Camenisch, Hans; Bachner, Jarmila; and Berg, Wolfgang F., 4,386,148, Cl. 430-131.000.

ELITEX, koncern textilniho strojirenstvi: *See*—
Sevcik, Ladislav, 4,385,649, Cl. 139-435.000.

Elkem A/S: *See*—
Skjeldal, Sigve, 4,385,935, Cl. 106-98.000.

Elliott Brothers (London) Limited: *See*—
Ellis, Stafford M., 4,385,803, Cl. 350-174.000.

Elliott, Franklin E.; and Estrada, Jaime Z., to Maxwell Products, Inc. Articulated adjustable bed having a single motor drive. 4,385,410, Cl. 5-67.000.

Elliott, James M., to Paramount Sound Systems Corporation. System for controlling distinct devices in a theater. 4,385,814, Cl. 352-92.000.

Ellis, Stafford M., to Elliott Brothers (London) Limited. Display units with periscopic arrangement. 4,385,803, Cl. 350-174.000.

Ellsworth, Daniel H., to Scan Optics. Bead chain stacker. 4,385,758, Cl. 271-224.000.

Elo-Chem Atztechnik GmbH: *See*—
Kastening, Bertel; Faul, Wolfgang; Furst, Leander; and Holzer, Walter, 4,385,969, Cl. 204-105.00R.

Emerson Electric Co.: *See*—
Steiner, Robert E.; and Savla, Chandrakant V., 4,385,550, Cl. 98-43.00R.

Emile, Philip, Jr.; and Kroeger, James K., to Sangamo Weston, Inc. Hysteresis type battery charger having output short circuit protection. 4,386,308, Cl. 320-22.000.

Endoh, Seiji; Tada, Shotaro; Kuga, Toru; Takeda, Yasuo; Mitsui, Kazuo; and Yoshimura, Yoji, to Sumitomo Electric Industries, Ltd. Connector for flat cable. 4,385,795, Cl. 339-176.0MF.

Energy Development Associates, Inc.: *See*—
Bjorkman, Harry K., Jr., 4,386,140, Cl. 429-19.000.

Energy Electronics, Inc.: *See*—
Kalmowitz, Sheldon; Beigel, Regis; Sutphin, Eldon; and McGhee, Charles, 4,386,275, Cl. 250-342.000.

Engelhard Corporation: *See*—
Hildebrandt, Steven J., 4,386,010, Cl. 252-428.000.

English Electric Company Limited, The: *See*—
Lee, Alan S., 4,385,492, Cl. 60-398.000.

English Electric Valve Company Limited: *See*—
Nelson, Peter D., 4,386,294, Cl. 313-388.000.

English, George J.: *See*—
Rothwell, Harold L.; Keeffe, William M.; and English, George J., 4,386,292, Cl. 313-112.000.

Englund, Michael S.: *See*—
Eilers, Melvin L.; and Englund, Michael S., 4,385,910, Cl. 55-90.000.

Enomoto, Minoru: *See*—
Nishimura, Hideo; and Enomoto, Minoru, 4,386,306, Cl. 318-571.000.

Enyo, Hiroji: *See*—
Kotani, Teizo; Enyo, Hiroji; Tanaka, Minoru; Takemura, Yasuhiko; and Miyabayashi, Toshio, 4,386,181, Cl. 524-304.000.

Erickson, Wayne E.: *See*—
Dille, William A.; Erickson, Wayne E.; and Royer, Leon D., 4,386,132, Cl. 428-372.000.

Eriksson, Lars. Battery terminal post clamp. 4,385,796, Cl. 339-238.000.

Erskine, Paul, to Mechanical Applications, Inc. Machine for inserting spring pins. 4,385,719, Cl. 227-116.000.

Estabrook, Lawrence E., to Texaco Development Corporation. Start-up method for a gasification reactor. 4,385,906, Cl. 48-197.00R.

Estep, Timothy N., to Baxter Travenol Laboratories, Inc. Additive solution and method for preserving normal red cell morphology in whole blood during storage. 4,386,069, Cl. 424-101.000.

Estrada, Jaime Z.: *See*—
Elliott, Franklin E.; and Estrada, Jaime Z., 4,385,410, Cl. 5-67.000.

Etoh, Yukihiro: *See*—
Sugasawa, Fukashi; Iizuka, Haruhiko; Etoh, Yukihiro; and Tanaka, Toshiaki, 4,385,600, Cl. 123-198.00F.

Evans, Jack L.: *See*—
Campbell, Karen J.; and Evans, Jack L., 4,386,135, Cl. 428-447.000.

Everett Metal Products, Inc.: *See*—
Tucker, Gordon H., 4,385,905, Cl. 48-62.00R.

Everroad, James M. Skip rope. 4,385,759, Cl. 272-75.000.

Exide Corporation: *See*—
Weidner, Evert C.; and Brecht, William B., 4,386,141, Cl. 429-64.000.

Expanscience: *See*—
Guillon, Claude, 4,386,067, Cl. 424-95.000.

Exploration Logging, Inc.: *See*—
Mumby, Edward S.; and Jeter, John D., 4,386,422, Cl. 367-85.000.

Exxon Research and Engineering Co.: *See*—
Canevari, Gerard P., 4,386,052, Cl. 422-42.000.
Neskora, Daniel R.; and Schlosberg, Richard H., 4,385,981, Cl. 208-8.00R.
Skopp, Alvin; Ciprios, George; and Batzold, John S., 4,385,970, Cl. 204-108.000.

Ezekiel, Frederick D., to Data Technology, Inc. Angular information transducer mounting. 4,386,270, Cl. 250-231.0SE.

F. L. Smidth & Co.: *See*—
Kartman, Helge C. C., 4,385,730, Cl. 241-57.000.

Face Maker Industry: *See*—
Mawer, Gary L., 4,385,755, Cl. 269-41.000.

Faint, Richard C.: *See*—
McGinley, Charles M.; Schamber, Arlen R.; Melin, Denny L.; Christensen, Ronald L.; Tazzia, Edward K.; Hackbarth, Richard W.; Fogarty, Terry M.; and Faint, Richard C., 4,385,987, Cl. 210-150.000.

Fairchild Camera and Instrument Corp.: *See*—
Ong, Warren R., 4,386,420, Cl. 365-208.000.

Fancher, Llewellyn W., to Stauffer Chemical Company. Method of increasing the yield of legumes utilizing D- or DL-α-O,O-diethylphosphorodithioylacetylphenylglycine ethyl ethers. 4,385,922, Cl. 71-87.000.

Fancher, Llewellyn W.; Walker, Francis H.; and Buren, Lawrence L., to Stauffer Chemical Company. Method of increasing the yield of legumes utilizing O,O-dialkyldithiophosphorylacetylglycine ethyl esters. 4,385,923, Cl. 71-87.000.

Far East Engineering Co., Ltd.: *See*—
Omata, Katsumori, 4,385,869, Cl. 417-271.000.

Farber, Heinrich: *See*—
Van Landeghem, Willy K.; De Maayer, Petrus J.; Loots, Francois P.; Pattyn, Hendrik A.; Bauer, Walter; Farber, Heinrich; Muller, Jurgen; and Schmidt, Manfred, 4,386,431, Cl. 378-187.000.

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Fergason, James L. Liquid crystal display with improved angle of view and response times. 4,385,806, Cl. 350-347.00R.

Fergason, James L., to Becton, Dickinson and Company. Novel compositions, devices and method. 4,385,844, Cl. 374-160.000.

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Giltner, Michael E.; Mueller, Jack C.; and Fiest, Robert R., 4,386,416, Cl. 364-900.000.

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Burbank, Max B.; Lomnes, Randy K.; Vrba, Jiri; and Fife, Alistair A., 4,386,318, Cl. 324-244.000.

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Withers, Jean D.; Fineo, Carlo; Withers, L. Andrew, Jr.; and Withers, Leland A., Sr., 4,385,454, Cl. 34-110.000.
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Possati, Mario; Golinelli, Guido; and Selleri, Narciso, 4,385,444, Cl. 33-143.00L.

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Mullins, Lynn D.; and Fitch, John L., 4,385,662, Cl. 166-263.000.

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Wilson, Stephen T.; Lok, Brent M.; and Flanigen, Edith M., 4,385,994, Cl. 210-689.000.

Fleck, Fritz, to Sandoz Ltd. 7-Styryl coumarin derivatives. 4,386,200, Cl. 542-441.000.

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Pitti, Vincent J., 4,385,458, Cl. 37-281.000.

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Focke, Heinz H., 4,385,479, Cl. 53-389.000.

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Fogarty, Terry M.: *See—*
McGinley, Charles M.; Schamber, Arlen R.; Melin, Denny L.; Christensen, Ronald L.; Tazzia, Edward K.; Hackbarth, Richard W.; Fogarty, Terry M.; and Faint, Richard C., 4,385,987, Cl. 210-150.000.

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Ford Motor Company: *See—*
Chang, Yun F., 4,386,173, Cl. 523-453.000.

Forshee, David J., to Moti, Samuel. X-Ray face mask and bib device. 4,386,277, Cl. 250-516.100.

Forster, Karl-Heinz: *See—*
Johne, Hans; Jentzsch, Arndt; Muller, Wolfgang; Forster, Karl-Heinz; and Schuck, Helmut, 4,385,560, Cl. 101-365.000.

Foster Wheeler Energy Corporation: *See—*
Slater, Billy R., 4,386,232, Cl. 178-18.000.

Fox, Ronald L., to United States of America, Energy. Downhole steam generator with improved preheating, combustion and protection features. 4,385,661, Cl. 166-59.000.

Fraiser, Frederick F. Machine for installing upholstery covers. 4,385,427, Cl. 29-91.500.

Fralish, Mark R., to J. I. Case Company. Snow caster. 4,385,457, Cl. 37-250.000.

Francis, Ralph M., Jr., to Webster Electric Company, Inc. Power supply for electrostatic apparatus. 4,386,395, Cl. 363-27.000.

Frank, Ronald M. Endless track construction. 4,385,652, Cl. 152-187.000.

Franklin, Leonard N., Jr., to General Motors Corporation. Universal joint. 4,385,899, Cl. 464-146.000.

Franks, Jeffrey G.: *See—*
Clauer, Arlen E.; and Franks, Jeffrey G., 4,385,992, Cl. 210-662.000.

Franz, Dieter: *See—*
Wackerle, Peter; and Franz, Dieter, 4,385,957, Cl. 156-273.900.

Freedman, George: *See—*
Bowen, Robert F.; Freedman, George; and Teich, Wesley W., 4,386,109, Cl. 426-241.000.

Freeman, Bruce A., to Carlisle Corporation. Child resistant container and closure. 4,385,706, Cl. 215-225.000.

Freeman, Robert A.: *See—*
Benedict, Charles E.; Kimsey, Kenneth G., Jr.; and Freeman, Robert A., 4,385,696, Cl. 206-443.000.

Freller, Helmut: *See—*
Schuster-Wolden, Hans; Freller, Helmut; Kruger, Hans; Welsch, Wofgang; Peetermans, Andre; Rolke, Hans J.; and Schack, Peter, 4,385,976, Cl. 204-192.00P.

Frenz, Norbert W., Jr.: *See—*
Mead, Ralph T.; Rudolph, Frank W.; Frenz, Norbert W., Jr.; and Greatbatch, Wilson, 4,385,439, Cl. 29-623.200.

Friedmann, Daniel: *See—*
Young, Jeff F.; and Friedmann, Daniel, 4,386,315, Cl. 324-120.000.

Friedmann, Youn and Associates Inc.: *See—*
Young, Jeff F.; and Friedmann, Daniel, 4,386,315, Cl. 324-120.000.

Frish, Michael B.: *See—*
Webb, Watt W.; and Frish, Michael B., 4,385,830, Cl. 356-28.000.

Fritsche, Joel L.: *See—*
Link, William T.; Fritsche, Joel L.; and Crisp, Donald E., 4,385,515, Cl. 72-416.000.

Fritz, Alan W.: *See—*
Floyd, David M.; Fritz, Alan W.; and Cimarusti, Christopher M., 4,386,034, Cl. 260-456.00A.

Frohberger, Paul-Ernst: *See—*
Kranz, Eckart; Kramer, Wolfgang; Buchel, Karl H.; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,386,088, Cl. 424-245.000.

Fromm, Ellsworth H.: *See—*
Schirmer, Robert M.; and Fromm, Ellsworth H., 4,385,490, Cl. 60-39.230.

Fuchs, Rainer: *See—*
Maurer, Fritz; Priesnitz, Uwe; Riebel, Hans-Jochem; Fuchs, Rainer; and Klauke, Erich, 4,386,035, Cl. 260-463.000.

Fuel Dimensions, Inc.: *See—*
Keane, Robert S., 4,385,615, Cl. 123-514.000.

Fuerst, Erwin J. Inflatable device to close a hull breach. 4,385,582, Cl. 114-227.000.

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Nagasawa, Ikuo; Mukae, Kazuo; Tsuda, Koichi; Ishii, Takashi; and Sakaguchi, Toyoshige, 4,386,022, Cl. 252-521.000.

Fuji Jukogyo Kabushiki Kaisha: *See—*
Ohgami, Masaaki; Yasuda, Hiroki; and Suzuki, Hitoshi, 4,385,608, Cl. 123-440.000.

Fuji Kiko Kabushiki Kaisha: *See—*
Yamamoto, Yoshimi, 4,385,736, Cl. 242-107.000.

Fuji Photo Film Co., Ltd.: *See—*
Akao, Mutsuo, 4,386,124, Cl. 428-35.000.
Aono, Toshiaki, 4,386,144, Cl. 430-7.000.
Mori, Sumio, 4,386,366, Cl. 358-135.000.
Shinozaki, Fumiaki; Washizawa, Yasuo; Ikeda, Tomoaki; Nakao, Sho; and Kondoh, Syunichi, 4,386,153, Cl. 430-285.000.

Fuji Xerox Co., Ltd.: *See—*
Murayama, Tomio; Moriguchi, Haruhiko; Moriguchi, Fujio; and Ohmori, Takashi, 4,386,360, Cl. 346-76.0PH.

Fujimaki, Hiroto; Ajima, Shigetoshi; and Watanabe, Kazuhiro, to Kureha Kagaku Kogyo Kabushiki Kaisha. Organic friction material. 4,386,168, Cl. 523-155.000.

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Kohzai, Yoshinori; and Fujioka, Yoshiki, 4,386,305, Cl. 318-571.000.

Fujisaki, Yasuyuki: *See—*
Seimiya, Ryubun; Yamada, Yutaka; Tomono, Makoto; Tarumi, Noriyoshi; Fujisaki, Yasuyuki; Takahashi, Minoru; Ogawara, Hiroshi; and Funaki, Hirozo, 4,386,147, Cl. 430-99.000.

Fujita, Yosuke; Fukushima, Fumio; Fukuda, Yoji; and Nitta, Tsuneharu, to Matsushita Electric Industrial Co., Ltd. Ceramic luminescent device. 4,386,295, Cl. 313-463.000.

Fujitsu Fanuc Ltd.: *See—*
Imazeki, Ryoji; Yamazaki, Etsuo; Sasaki, Takao; and Yamaguchi, Masashi, 4,386,408, Cl. 364-474.000.
Kohzai, Yoshinori; and Fujioka, Yoshiki, 4,386,305, Cl. 318-571.000.

Fujitsu Limited: *See—*
Itoh, Masanori; and Tanaka, Minoru, 4,386,297, Cl. 315-169.400.

Fukasawa, Atsushi: *See—*
Masuda, Yoshio; Fukasawa, Atsushi; Sato, Takuro; Yoshida, Tatsumasa; and Ando, Hiromi, 4,386,328, Cl. 333-202.000.

Fukuda, Kunio; and Kasahara, Hideo, to Asahi-Dow Limited. Thermoplastic resin composition having high heat resistance. 4,386,176, Cl. 525-68.000.

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Fujita, Yosuke; Fukushima, Fumio; Fukuda, Yoji; and Nitta, Tsuneharu, 4,386,295, Cl. 313-463.000.

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Fujita, Yosuke; Fukushima, Fumio; Fukuda, Yoji; and Nitta, Tsuneharu, 4,386,295, Cl. 313-463.000.

Fullerton, W. Wardle: *See—*
O'Rourke, Edward C.; and Fullerton, W. Wardle, 4,386,066, Cl. 424-92.000.

Funaki, Hirozo: *See—*
Seimiya, Ryubun; Yamada, Yutaka; Tomono, Makoto; Tarumi, Noriyoshi; Fujisaki, Yasuyuki; Takahashi, Minoru; Ogawara, Hiroshi; and Funaki, Hirozo, 4,386,147, Cl. 430-99.000.

Funayama, Shizuo: *See*—
Murakami, Fumikazu; and Funayama, Shizuo, 4,386,244, Cl. 179-179.000.
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Kastening, Bertel; Faul, Wolfgang; Furst, Leander; and Holzer, Walter, 4,385,969, Cl. 204-105.00R.
Furukawa Circuit Foil Co., Ltd.: *See*—
Nakatsugawa, Hiroshi, 4,386,139, Cl. 428-607.000.
Futakuchi, Michio; and Kitakoga, Hidetoshi, to Mitsubishi Denki Kabushiki Kaisha. Process for preparing fiber reinforced plastics. 4,385,952, Cl. 156-174.000.
G-C Dental Industrial Corp.: *See*—
Sato, Atsushige; Miura, Ishi; Kunei, Yasuhiro; Okuno, Osamu; and Yoshida, Bunsaku, 4,385,892, Cl. 433-228.000.
G. D. Searle & Co.: *See*—
Henderson, Richard E. L.; and Pitzele, Barnett S., 4,386,211, Cl. 548-196.000.
Gabry, Frank F.; and Borge, Gene A., to McKee Door Company. Overhead door stop. 4,385,471, Cl. 49-322.000.
Gardner, Donald M.: *See*—
Serlin, Irving; and Gardner, Donald M., 4,386,184, Cl. 524-425.000.
Gardner, Leland V., to Santa Barbara Research Center. Apparatus for reception and radiation of electromagnetic energy in predetermined fields of view. 4,385,833, Cl. 356-141.000.
Gargini, Eric J., to Communications Patents Limited. Combined wired broadcasting and viewphone system. 4,386,365, Cl. 358-85.000.
Garvey Corporation: *See*—
Buckminster, William F.; Covert, William J.; and Conyngham, Wilson Y., 4,385,701, Cl. 209-598.000.
Gaston, David E., to Brooktronics Engineering Corporation. Electroplating a simulated bright brass finish. 4,385,968, Cl. 204-36.000.
Gavagan, James A.: *See*—
Gulette, Ronald S.; Gavagan, James A.; Petersen, Carl M., III; and Squires, Steven L., 4,385,737, Cl. 242-107.700.
Gearhart Industries, Inc.: *See*—
Miller, Alvin B., 4,385,449, Cl. 33-304.000.
Gedrat, Klaus H.: *See*—
Brady, Joseph M.; Cordes, Franz R.; Gedrat, Klaus H.; Goffredo, Daniel L.; Meyer, Walter; and Shakley, Conrad D., 4,385,967, Cl. 204-27.000.
Geersheuvels, Charles H.: *See*—
de Graaf, Theodorus F. M.; and Geersheuvels, Charles H., 4,386,207, Cl. 546-164.000.
Geiger, Wolfgang: *See*—
Eheim, Franz; Geiger, Wolfgang; and Stadler, Werner, 4,385,614, Cl. 123-506.000.
Gelardi, Anthony L.; and Gelardi, Paul J. Origin identity insert for packaged cassettes. 4,385,693, Cl. 206-387.000.
Gelardi, Paul J.: *See*—
Gelardi, Anthony L.; and Gelardi, Paul J., 4,385,693, Cl. 206-387.000.
Gellert, Jobst U. Sprue bushing with cast in electrical heating element. 4,386,262, Cl. 219-424.000.
General Director of the Agency of Industrial Science and Technology: *See*—
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Kuwana, Noriaki; Abe, Shinya; and Yamada, Kouzi, 4,386,227, Cl. 568-875.000.
General Dynamics/Electronics Division: *See*—
Tricoles, Gus P.; and Rope, Eugene L., 4,386,356, Cl. 343-113.00R.
General Electric Company: *See*—
Baumgartner, Charles E.; and Zarnoch, Kenneth P., 4,386,040, Cl. 264-56.000.
Beck, Charles E., 4,386,296, Cl. 315-53.000.
Castonguay, Roger N., 4,386,246, Cl. 200-50.0AA.
Cella, James A., 4,386,222, Cl. 568-346.000.
Cohen, Stuart C., 4,386,027, Cl. 523-210.000.
Cutler, Scott E.; and Eichelberger, Charles W., 4,386,347, Cl. 340-712.000.
Denny, Dann W.; Hilty, Ronald L.; and Thompson, Paige W., 4,385,502, Cl. 62-155.000.
Kleptz, James A., 4,386,303, Cl. 318-327.000.
Kocher, Mark J.; and Steigerwald, Robert L., 4,386,394, Cl. 363-20.000.
Waldron, Wesley K., 4,386,293, Cl. 313-583.000.
General Mills, Inc.: *See*—
Richter, Gary W., 4,386,108, Cl. 426-93.000.
General Motors Corporation: *See*—
Franklin, Leonard N., Jr., 4,385,899, Cl. 464-146.000.
Knauss, Timotheus, 4,385,846, Cl. 384-420.000.
Waite, Lynn E., 4,385,754, Cl. 267-71.000.
Genoa, Joseph, to Atlantic Vacuum Parts Corp. Vacuum cleaner hose end adapter. 4,385,790, Cl. 339-16.00R.
Genpak Corporation: *See*—
Bowen, James L., 4,385,711, Cl. 220-284.000.
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McGinley, Charles M.; Schamber, Arlen R.; Melin, Denny L.; Christensen, Ronald L.; Tazzia, Edward K.; Hackbarth, Richard W.; Fogarty, Terry M.; and Faint, Richard C., 4,385,987, Cl. 210-150.000.
George, John B., to RCA Corporation. Wired remote control apparatus for a television receiver. 4,386,371, Cl. 358-194.100.
Gerber Garment Technology, Inc.: *See*—
Pearl, David R., 4,385,956, Cl. 156-247.000.
Gerberich, H. Robert; and Smith, Eldred T., to Celanese Corporation. Catalyst of supported silver and lead for the production of formaldehyde. 4,386,014, Cl. 252-443.000.
Getz, Edward H.: *See*—
Deschaaf, Clifford L.; and Getz, Edward H., 4,385,452, Cl. 34-53.000.
Geze GmbH: *See*—
Scheck, Georg; and Storandt, Ralf, 4,385,773, Cl. 280-612.000.
Gibson, Gary E.; and Peterson, Christine J., to Cornell Research Foundation, Inc. Diaminopyridines to improve cognition. 4,386,095, Cl. 424-263.000.
Gibson, Walter G.; and Christensen, Roy M., to RCA Corporation. Vertical and horizontal detail signal processor. 4,386,434, Cl. 455-37.000.
Giesecke, Henning; Merten, Rudolf; and Rottmaier, Ludwig, to Bayer Aktiengesellschaft. Di- and Oligo-1,2,4-triazolidine-3,5-diones and processes for their production. 4,386,213, Cl. 548-264.000.
Gilcher, Ronald O.; Latham, Allen, Jr.; Schiff, Jonathan D.; and Schoendorfer, Donald W., to Haemonetics Corporation. Blood donation unit. 4,385,630, Cl. 604-31.000.
Gilmour, Hugh S. A., to Eastman Kodak Company. Fabrication of arrays containing interlaid patterns of microcells. 4,386,145, Cl. 430-7.000.
Giltner, Michael E.; Mueller, Jack C.; and Fiest, Robert R., to Mostek Corporation. Data compression, encryption, and in-line transmission system. 4,386,416, Cl. 364-900.000.
Glasbergen, Johannes W., to U.S. Philips Corporation. Circuit arrangement for reproducing in an output circuit a current flowing in an input circuit. 4,386,325, Cl. 330-288.000.
Glen, Alasdair T.: *See*—
Crossley, Neville S.; Glen, Alasdair T.; and Hughes, Leslie R., 4,386,080, Cl. 424-209.000.
Global Coatings Limited: *See*—
Kaufmann, John H., 4,386,136, Cl. 428-451.000.
Goffredi, Albert S.; Lisi, John E.; and Edwards, Ralston G., Jr., to Owens-Illinois, Inc. Method of forming a vial blowback cavity. 4,385,919, Cl. 65-109.000.
Goffredo, Daniel L.: *See*—
Brady, Joseph M.; Cordes, Franz R.; Gedrat, Klaus H.; Goffredo, Daniel L.; Meyer, Walter; and Shakley, Conrad D., 4,385,967, Cl. 204-27.000.
Goguen, George J., to Container Corporation of America. Corner protecting device. 4,385,698, Cl. 206-586.000.
Goguen, Louis J., to King Instrument Corporation. Splicing tape dispenser-applicator. 4,385,959, Cl. 156-506.000.
Golay, Louis C.: *See*—
Roch, Charles; and Golay, Louis C., 4,385,446, Cl. 33-178.00R.
Golben, Peter M., to MPD Technology Corporation. Fast-acting self-resetting hydride actuator. 4,385,494, Cl. 60-528.000.
Goldsmith, Aaron. Carpet cleaning system. 4,385,413, Cl. 15-322.000.
Goldstein, Brad L. Canine cervical brace. 4,385,592, Cl. 119-96.000.
Golinelli, Guido: *See*—
Possati, Mario; Golinelli, Guido; and Selleri, Narciso, 4,385,444, Cl. 33-143.00L.
Goodale, Kenneth S.: *See*—
James, Richard N.; and Goodale, Kenneth S., 4,385,587, Cl. 118-50.000.
Goossens, Willy P. M. Storage installation permitting the automatic selection and removal of articles. 4,385,859, Cl. 414-267.000.
Gordon, Roy G. Coating process using alkoxy substituted silicon-bearing reactant. 4,386,117, Cl. 427-109.000.
Gorman, Joseph G.; and Roach, James F., to Westinghouse Electric Corp. Vacuum circuit interrupter with auxiliary contact for plural arc path device with arc rotating means associated with the primary and auxiliary contacts. 4,386,249, Cl. 200-144.00B.
Goto, Kazuhiro: *See*—
Oe, Takanori; Moriwaki, Minoru; Goto, Kazuhiro; and Hisadome, Masao, 4,386,092, Cl. 424-256.000.
Goto, Kenji: *See*—
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Goto, Yoshinori: *See*—
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Gould Inc., Electric Fuse Div.: *See*—
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O'Brien, Terry R.; and Lechner, Kurt W., 4,386,335, Cl. 337-261.000.
Grace, Frederick J. Placement and retrieval barge for off-shore well drilling. 4,385,578, Cl. 114-77.00A.
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Graham, Thomas; Redman, Frank B.; and Surtees, Cyril J., to Reed International Limited. Paint formulation and method. 4,386,171, Cl. 523-337.000.
Graham, Thomas G., to Singer Company, The. Sewing machine control mechanism mounting plate. 4,385,577, Cl. 112-258.000.
Granberg, Mauritz L.; Hanson, David G.; Rajala, Robert L.; and Whipple, William G., to Sperry Corporation. High resolution graphics smoothing. 4,386,349, Cl. 340-723.000.
Grancio, Michael R.; Stewart, David F.; and Cass, John F., to Sweetheart Plastics, Inc. Thermoformable polymer blend composition

comprising styrene polymer, olefin polymer and block copolymer. 4,386,187, Cl. 525-96.000.
Grancio, Michael R.; Stewart, David F.; and Cass, John F., to Sweetheart Plastics, Inc. Thermoformable polymer blend composition. 4,386,188, Cl. 525-96.000.
Granda, Edward J.: *See*—
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,386,064, Cl. 424-49.000.
Grant, Robert F. Article display and holder apparatus. 4,385,688, Cl. 206-0.830.
Grapha-Holding AG: *See*—
Muller, Hans, 4,385,757, Cl. 271-189.000.
Greatbatch, Wilson: *See*—
Mead, Ralph T.; Rudolph, Frank W.; Frenz, Norbert W., Jr.; and Greatbatch, Wilson, 4,385,439, Cl. 29-623.200.
Grieshaber, Peter: *See*—
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Griffin, Brian P.: *See*—
Cogswell, Frederic N.; Griffin, Brian P.; and Rose, John B., 4,386,174, Cl. 524-27.000.
Griffith, Ronald C.: *See*—
Kinsolving, Clyde R.; and Griffith, Ronald C., 4,386,105, Cl. 424-325.000.
Griffiths, Trevor J.: *See*—
Sharpe, Raymond; Griffiths, Trevor J.; and Hunt, Peter, 4,385,894, Cl. 464-31.000.
Groffman, Stephan S.: *See*—
McCready, Newton W.; and Groffman, Stephan S., 4,386,121, Cl. 427-235.000.
Gross, Benjamin; and Ramage, Michael P., to Mobil Oil Corporation. FCC Reactor with a downflow reactor riser. 4,385,985, Cl. 208-113.000.
Grosniklaus, Hans. Apparatus for the prevention of fire spreading within the feeding channel leading into the fire chamber of a furnace for solid fuel. 4,385,569, Cl. 110-263.000.
Grow, Harlow B. Marble game action toy. 4,385,766, Cl. 273-328.000.
Gruber, Werner, to Henkel Kommanditgesellschaft auf Aktien. Stable, anaerobically-hardening adhesives containing mixed HN-acidic compoun/tertiary amine/percarboxylic acid initiators. 4,386,194, Cl. 526-301.000.
Grupp, Gunther: *See*—
Bergmann, Ewald; Schneider, Franz; Hoffmann, Hartmut; Schumann, Burkhard; and Grupp, Gunther, 4,386,304, Cl. 318-561.000.
Grush, Robert J. Cylindrical hoist bucket for free flowing granular material. 4,385,780, Cl. 294-70.000.
GTE Automatic Electric Labs Inc.: *See*—
Bertellotti, Ansano; and Taliste, Arvo, 4,385,438, Cl. 29-764.000.
GTE Laboratories Incorporated: *See*—
Norden, Alexander R., 4,386,329, Cl. 335-35.000.
GTE Products Corporation: *See*—
Broadt, David R., 4,385,888, Cl. 431-359.000.
Rothwell, Harold L.; Keeffe, William M.; and English, George J., 4,386,292, Cl. 313-112.000.
Vanderpool, Clarence D., 4,385,972, Cl. 204-146.000.
Guardian Electric Manufacturing Company: *See*—
Watts, Roger E.; and Britton, Leon R., 4,386,330, Cl. 335-167.000.
Guenin, Bruce M.: *See*—
Kortovich, Charles S., Jr.; and Guenin, Bruce M., 4,385,939, Cl. 148-2.000.
Gugel, Georg; and Huber, Franz, to Kraftwerk Union Aktiengesellschaft. Apparatus for testing the walls of vessels. 4,385,523, Cl. 73-640.000.
Guidry, Eddie J.: *See*—
Ingalls, Edgar J., deceased; and Guidry, Eddie J., 4,385,422, Cl. 17-73.000.
Guillon, Claude, to Expanscience. Cosmetic compositions. 4,386,067, Cl. 424-95.000.
Guimond, Roy A.: *See*—
Gulliksen, John E.; Guimond, Roy A.; and Daly, Charles F., 4,386,391, Cl. 362-232.000.
Guisinger, Barrett E., to Sony Corporation. High gain, current mode preamplifier. 4,386,378, Cl. 360-46.000.
Gulette, Ronald S.; Gavagan, James A.; Petersen, Carl M., III; and Squires, Steven L., to Irvin Industries Inc. Comfort lock release system. 4,385,737, Cl. 242-107.700.
Gulf Oil Corporation: *See*—
Rutter, Jerry L., 4,386,201, Cl. 544-144.000.
Wisneski, Peter M., 4,385,840, Cl. 366-336.000.
Gulliksen, John E.; Guimond, Roy A.; and Daly, Charles F., to Koehler Manufacturing Company. Luminaire apparatus with multiple light sources including method and means for switching and adjusting focus of the light sources. 4,386,391, Cl. 362-232.000.
Gustafsson, Berth U., to Projectus Industriprodukter AB. Feeding device. 4,385,686, Cl. 198-434.000.
Gutsche, Klaus: *See*—
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Guyer, James M.: *See*—
Rasala, Edward; Wallach, Steven; Alsing, Carl J.; Holberger, Kenneth D.; Holland, Charles J.; West, Thomas; Guyer, James M.; Coyle, Richard W.; Ziegler, Michael L.; and Druke, Michael B., 4,386,399, Cl. 364-200.000.
Hackbarth, Richard W.: *See*—
McGinley, Charles M.; Schamber, Arlen R.; Melin, Denny L.; Christensen, Ronald L.; Tazzia, Edward K.; Hackbarth, Richard W.; Fogarty, Terry M.; and Faint, Richard C., 4,385,987, Cl. 210-150.000.
Hacke, Walter; and Horn, Herman. Injectable oxytetracycline compositions. 4,386,083, Cl. 424-227.000.
Haemonetics Corporation: *See*—
Gilcher, Ronald O.; Latham, Allen, Jr.; Schiff, Jonathan D.; and Schoendorfer, Donald W., 4,385,630, Cl. 604-31.000.
Haga, Masakatsu: *See*—
Inomata, Koichiro; Hasegawa, Michio; Shimanuki, Senji; and Haga, Masakatsu, 4,385,932, Cl. 75-123.00B.
Hagen, Jurgen; Hetz, Walter; Hetzel, Gert; and Schroeder, Dirk, to Siemens Aktiengesellschaft. Ultrasonic apparatus for sector scanning. 4,385,521, Cl. 73-619.000.
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Costales, Manuel; and Hakki, Moustafa I., 4,385,487, Cl. 57-105.000.
Haldeman, Peter P.: *See*—
Ehrhart, Philip J.; and Haldeman, Peter P., 4,385,484, Cl. 56-320.100.
Halfacre, Mark A.; and Pan, David S., to Harris Corporation. Method for fabricating CMOS in P substrate with single guard ring using local oxidation. 4,385,947, Cl. 148-187.000.
Hall, Floyd V., to Liggett Group Inc. Apparatus for forming an aeration groove in a filter. 4,385,536, Cl. 82-52.000.
Hall, John B.: *See*—
Sprecker, Mark A.; and Hall, John B., 4,386,023, Cl. 252-522.00R.
Hamada, Eiji: *See*—
Yamamoto, Yasunobu; Sakabe, Toshiaki; and Hamada, Eiji, 4,385,682, Cl. 192-107.00M.
Hamilton, Alan D.: *See*—
Peterson, Gregory P.; and Hamilton, Alan D., 4,386,166, Cl. 521-99.000.
Hamilton Industries, Inc.: *See*—
Zboralski, Jon A., 4,385,551, Cl. 98-115.0LH.
Hamilton, Martin W., to Eaton Corporation. Spark electrode assembly. 4,386,385, Cl. 361-253.000.
Hammann, Ingeborg: *See*—
Arlt, Dieter; Homeyer, Bernhard; Hammann, Ingeborg; and Paul, Volker, 4,386,082, Cl. 424-215.000.
Hammond, Ogden H., III; and Wroclawski, John T., to Hetra Corporation, The. Sample heater for non-destructively determining the composition of an unknown material sample. 4,385,843, Cl. 374-43.000.
Hammond, Robert J., to Bendix Corporation, The. Vibration adjustable spacer. 4,386,390, Cl. 361-412.000.
Hamou, Jacques, to Storz, Karl. Contact endoscopy and micro endoscopy. 4,385,810, Cl. 350-520.000.
Hanna, Richard D. Phonorecord label. 4,385,460, Cl. 40-340.000.
Hannert, Lawrence C.: *See*—
Narveson, Parm L.; Clark, Robert W.; and Hannert, Lawrence C., 4,386,345, Cl. 340-703.000.
Hanslik, Wilhelm, to American Maplan Corporation. Preheated extruder. 4,385,883, Cl. 425-204.000.
Hanson, David G.: *See*—
Granberg, Mauritz L.; Hanson, David G.; Rajala, Robert L.; and Whipple, William G., 4,386,349, Cl. 340-723.000.
Hareng, Michel: *See*—
Perbet, Jean-Noel; Hareng, Michel; and Le Berre, Serge, 4,385,807, Cl. 350-350.00S.
Harima, Hiroshi: *See*—
Yoshioka, Yoshihiro; Harima, Hiroshi; and Nishimura, Motokazu, 4,386,172, Cl. 523-408.000.
Harms, Margret; and Luthje, Holger, to U.S. Philips Corporation. Method of manufacturing a thin-film magnetic field sensor. 4,386,114, Cl. 427-47.000.
Harper, Barrie S. Cylinder locks. 4,385,510, Cl. 70-364.00R.
Harper, Peter W.; and Harvey, Mark C., to Bendix Corporation, The. Fuel injection system with fuel mapping. 4,385,611, Cl. 123-480.000.
Harrington, Donald F., to Dow Chemical Company, The. Ion-exchange compositions. 4,386,006, Cl. 252-184.000.
Harris Corporation: *See*—
Halfacre, Mark A.; and Pan, David S., 4,385,947, Cl. 148-187.000.
Harris, Loren A. Burner apparatus. 4,385,566, Cl. 110-110.000.
Hartman, Donn A.: *See*—
Cloud, David A.; Cloud, Charles E.; Pearson, William N.; and Hartman, Donn A., 4,385,882, Cl. 425-91.000.
Hartmann, Eduard, to Bucher-Guyer AG. Drainage device for a fruit press. 4,385,557, Cl. 100-107.000.
Hartwig, Peter; Weppner, Werner; and Wichelhaus, Winfried, to Max Planck Gesellschaft zur Forderung der Wissenschaften E.V. Process for the production of thermodynamically stable solid ion conductor materials. 4,386,020, Cl. 252-518.000.
Harvey, Mark C.: *See*—
Harper, Peter W.; and Harvey, Mark C., 4,385,611, Cl. 123-480.000.
Harwood, Leopold A.; and Shanley, Robert L., II, to RCA Corporation. Clamping arrangement for a video signal peaking system. 4,386,370, Cl. 358-166.000.
Hasegawa, Kinichi. Hair dyeing instrument. 4,385,638, Cl. 132-88.500.
Hasegawa, Michio: *See*—
Inomata, Koichiro; Hasegawa, Michio; Shimanuki, Senji; and Haga, Masakatsu, 4,385,932, Cl. 75-123.00B.
Hasegawa, Ryusuke, to Allied Corporation. Magnetic implements from glassy alloys. 4,385,944, Cl. 148-104.000.

Hass, Robert H., to Union Oil Company of California. Process for removing SO_x and NO_x compounds from gas streams. 4,386,058, Cl. 423-235.000.

Hatch, Randolph T.: *See*—
Kapiloff, Anita G.; and Hatch, Randolph T., 4,386,005, Cl. 252-180.000.

Hattori, Kyo: *See*—
Sakurai, Kazuhiro; Sawada, Hiroshi; and Hattori, Kyo, 4,385,491, Cl. 60-276.000.

Hattori, Tadashi; Goto, Kenji; Sawada, Daisaku; Shigematu, Takashi; Yamaguchi, Hiroaki; and Nishida, Misoru, to Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Ignition timing regulating device for internal combustion engine. 4,385,606, Cl. 123-416.000.

Haugrud, Brett G., to PPG Industries Canada, Ltd. Process for purifying crystalline potassium chloride. 4,385,902, Cl. 23-293.00R.

Hauser, Herbert J., Jr., to Deere & Company. Two-circuit cooling system and pump for an engine. 4,385,594, Cl. 123-41.290.

Hayano, Fusakazu: *See*—
Shiraki, Toshinori; Hoshi, Susumu; and Hayano, Fusakazu, 4,386,125, Cl. 428-36.000.

Hayashi, Kenji; Kobayashi, Shoji; and Ohshima, Keisuke, to Toray Industries, Inc. Laminated film. 4,386,130, Cl. 428-215.000.

Hayashi, Yoshihiro, to Aikoh America Corp. Porous plug for molten metal vessel. 4,385,752, Cl. 266-265.000.

Heckelsberg, Louis F.; Nelson, William T.; Schiff, Sidney; and Zuech, Ernest A., to Phillips Petroleum Company. Olefin dimerization. 4,386,229, Cl. 585-255.000.

Hedrick, Harold N.; and Whitney, Solon G., to American Petro Mart, Inc. Method and apparatus for folded moving bed ion exchange system. 4,385,993, Cl. 210-675.000.

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Heggset, Bjarne: *See*—
Saether, Torstein; and Heggset, Bjarne, 4,385,751, Cl. 266-207.000.

Heiskell, Ronald E. Drumstick and method of manufacture. 4,385,544, Cl. 84-422.00S.

Heisler, Joseph A.: *See*—
Pierce, Danny A.; Heisler, Joseph A.; and Self, Roger D., 4,385,979, Cl. 204-298.000.

Heitkamper, Peter: *See*—
Konig, Klaus; and Heitkamper, Peter, 4,386,033, Cl. 260-453.00P.

Helgstrand, Ake J. E.; Johansson, Karl N.; Misiorny, Alfons; Noren, Jan O.; and Stening, Goran B., to Astra Lakemedel Aktiebolag. Phosphonoformic acid esters and pharmaceutical compositions containing same. 4,386,081, Cl. 424-212.000.

Helle, Michel: *See*—
Desserre, Jacques; Helle, Michel; and Lazzari, Jean-Pierre, 4,386,383, Cl. 360-126.000.

Henderson, Richard E. L.; and Pitzele, Barnett S., to G. D. Searle & Co. Anti-ulcer urea compounds. 4,386,211, Cl. 548-196.000.

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Gruber, Werner, 4,386,194, Cl. 526-301.000.

Hennecke, Franz, to I.P.U. Ltd. Thermal cutting machine. 4,385,750, Cl. 266-69.000.

Henry, Tim W.; and Morgenthaler, Mark P., to Hewlett-Packard Company. Direct flash analog-to-digital converter and method. 4,386,339, Cl. 340-347.0AD.

Herchen, Stephen R.; and Widiger, Gary N., to Polaroid Corporation. Novel image dye-providing materials and photographic products and processes. 4,386,150, Cl. 430-222.000.

Herr, John A., to Singer Company, The. Multi-level armature winding for single air gap motor. 4,386,291, Cl. 310-225.000.

Herzog, Robert E.: *See*—
DuCharme, Robert T.; and Herzog, Robert E., 4,385,680, Cl. 188-72.400.

Hetra Corporation, The: *See*—
Hammond, Ogden H., III; and Wroclawski, John T., 4,385,843, Cl. 374-43.000.

Hetz, Walter: *See*—
Hagen, Jurgen; Hetz, Walter; Hetzel, Gert; and Schroeder, Dirk, 4,385,521, Cl. 73-619.000.

Hetzel, Gert: *See*—
Hagen, Jurgen; Hetz, Walter; Hetzel, Gert; and Schroeder, Dirk, 4,385,521, Cl. 73-619.000.

Hewitt, Frank A.; and Tillen, Keith G., to Rolls-Royce Limited. Process and apparatus for increasing the concentration of alcohol in aqueous solution. 4,385,914, Cl. 62-536.000.

Hewlett-Packard Company: *See*—
Henry, Tim W.; and Morgenthaler, Mark P., 4,386,339, Cl. 340-347.0AD.

Heymes, Rene, to Roussel Uclaf. 2-(2-Amino-4-thiazolyl)-2-methoxyimino-acetic acid derivatives. 4,386,210, Cl. 548-194.000.

Heytmeijer, Herman R., to Westinghouse Electric Corp. Recovery of yttrium and europium from contaminated solutions. 4,386,056, Cl. 423-21.500.

Higuchi, Takeru: *See*—
Pogany, Stefano A.; and Higuchi, Takeru, 4,386,103, Cl. 424-313.000.

Hilboll, Gerd; Lautenschlager, Hans-Heiner; Stoll, Brigitte; and Probst, Manfred, to A. Nattermann & Cie GmbH. N-Benzoyl-α-anilino alkane carboxylic acids and salts and esters thereof. 4,386,031, Cl. 260-404.000.

Hildebrandt, Steven J., to Engelhard Corporation. Treated attapulgite clay composition. 4,386,010, Cl. 252-428.000.

Hilt, Albrecht: *See*—
Schuette, Wilhelm; Hilt, Albrecht; Walter, Manfred; and Boehlke, Klaus, 4,386,178, Cl. 524-100.000.

Hilty, Ronald L.: *See*—
Denny, Dann W.; Hilty, Ronald L.; and Thompson, Paige W., 4,385,502, Cl. 62-155.000.

Hirano, Takashi, to Yamato Scale Company, Ltd. Combination weighing system. 4,385,671, Cl. 177-25.000.

Hirao, Susumu: *See*—
Aoki, Shigeo; Isogami, Shuzo; Tamamura, Junichi; Nagayoshi, Tatsuo; Yasui, Masaru; and Hirao, Susumu, 4,385,473, Cl. 51-281.00R.

Hiroshima Prefecture: *See*—
Komeyasu, Minoru; Miura, Yoshisuke; and Sakai, Hiroyoshi, 4,386,110, Cl. 426-244.000.

Hisadome, Masao: *See*—
Oe, Takanori; Moriwaki, Minoru; Goto, Kazuhiro; and Hisadome, Masao, 4,386,092, Cl. 424-256.000.

Hitachi Chemical Company, Ltd.: *See*—
Tanei, Hirayoshi; Ikegami, Akira; Arima, Hideo; Isogai, Tokio; and Kawabata, Kiyoshi, 4,386,387, Cl. 361-321.000.

Hitachi, Ltd.: *See*—
Igarashi, Osamu; and Inui, Tomoji, 4,386,406, Cl. 364-442.000.
Matsuoka, Shigeru; Tokunaga, Takeshi; Yonekura, Seiji; Yamauchi, Koji; and Suzuki, Mitsuo, 4,386,398, Cl. 364-167.000.

Hitachi Shipbuilding & Engineering Company Limited: *See*—
Kurihara, Tomomichi; and Mori, Nobuyoshi, 4,385,710, Cl. 220-89.00A.

Hitosugi, Toshiaki: *See*—
Umezu, Kenji; Watanabe, Masakichi; Nakada, Minoru; and Hitosugi, Toshiaki, 4,385,505, Cl. 62-285.000.

Ho, Allen P.: *See*—
Chu, Shao-Fu; Ho, Allen P.; Horng, Cheng T.; and Kemlage, Bernard M., 4,385,975, Cl. 204-192.00E.

Hodes, Gary; Manassen, Joost; and Cahen, David, to Yeda Research and Development Company. Surface treatment of semiconductor materials. 4,386,142, Cl. 429-111.000.

Hodgeman, Herbert H.: *See*—
Tomlin, Jerry B.; and Hodgeman, Herbert H., 4,385,746, Cl. 251-56.000.

Hodges, Joseph L.; Wassmer, Norman B.; and Myers, Paul R., to Ore-Ida Foods, Inc. Differential reflectivity method and apparatus for sorting strip items. 4,385,700, Cl. 209-539.000.

Hodogaya Chemical Co., Ltd.: *See*—
Takematsu, Tetsuo; Hoya, Masaaki; and Kaneshiki, Toshitaka, 4,385,927, Cl. 71-118.000.

Hoechst Aktiengesellschaft: *See*—
Kleiner, Hans-Jerg, 4,386,036, Cl. 260-502.40R.
Maurer, Alexander; Adrian, Renate; Wasel-Nielen, Horst-Dieter; Sorbe, Gunter; and Kandler, Joachim, 4,386,024, Cl. 252-523.000.

Hoekstra, Joop F.: *See*—
Richardson, Donald; and Hoekstra, Joop F., 4,385,403, Cl. 2-96.000.

Hoffmann, Hartmut: *See*—
Bergmann, Ewald; Schneider, Franz; Hoffmann, Hartmut; Schumann, Burkhard; and Grupp, Gunther, 4,386,304, Cl. 318-561.000.

Hoffmann-La Roche Inc.: *See*—
Hunkeler, Walter; and Kyburz, Emilio, 4,386,028, Cl. 260-239.30P.

Hogan, Philip J.; Stewart, Allan; and Whittam, Thomas V., to Imperial Chemical Industries PLC. Hydrocarbon conversion. 4,386,230, Cl. 585-467.000.

Holberger, Kenneth D.: *See*—
Rasala, Edward; Wallach, Steven; Alsing, Carl J.; Holberger, Kenneth D.; Holland, Charles J.; West, Thomas; Guyer, James M.; Coyle, Richard W.; Ziegler, Michael L.; and Druke, Michael B., 4,386,399, Cl. 364-200.000.

Holborow, Peter A., to Automatic Switch Company. Self-cycling valve. 4,385,639, Cl. 137-106.000.

Holland, Charles J.: *See*—
Rasala, Edward; Wallach, Steven; Alsing, Carl J.; Holberger, Kenneth D.; Holland, Charles J.; West, Thomas; Guyer, James M.; Coyle, Richard W.; Ziegler, Michael L.; and Druke, Michael B., 4,386,399, Cl. 364-200.000.

Hollandse Signaalapparaten B.V.: *See*—
Bleijerveld, Hendrik C.; and Oude Elberink, Bernard H. M., 4,386,353, Cl. 343-7.00A.

Hollo, Richard B., to RCA Corporation. Static discharge device. 4,385,824, Cl. 355-3.0SH.

Holthoff, Helmut, to Kocks Technik GmbH & Company. Transmission for driving a stretch-reducing rolling mill. 4,385,530, Cl. 74-675.000.

Holton, Robert J., to Eaton Corporation. Method of securing a stud to an apertured panel. 4,385,431, Cl. 29-525.000.

Holz, George E.; and Ogle, James A., to Burroughs Corporation. Display panel having memory. 4,386,348, Cl. 340-714.000.

Holzer, Walter: *See*—
Kastening, Bertel; Faul, Wolfgang; Furst, Leander; and Holzer, Walter, 4,385,969, Cl. 204-105.00R.

Homer, William G. Till guards. 4,386,264, Cl. 235-1.00R.

Homeyer, Bernhard: *See*—
Arlt, Dieter; Homeyer, Bernhard; Hammann, Ingeborg; and Paul, Volker, 4,386,082, Cl. 424-215.000.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Kawada, Shigeo; Akaku, Fumiyoshi; and Yukawa, Seiki, 4,386,278, Cl. 307-9.000.
Yoshimura, Shigekazu, 4,385,676, Cl. 180-219.000.

Honeywell Inc.: *See—*
Bergquist, Thomas A., 4,385,659, Cl. 165-12.000.
Lai, Juey H., 4,386,152, Cl. 430-269.000.
Saeki, Michio, 4,386,397, Cl. 364-148.000.
Honiden, Yoshinori; and Okazaki, Katsumi, to Toyo Kogyo Co., Ltd. Automobile ignition timing control system. 4,385,607, Cl. 123-425.000.
Hooykaas, Carel W. J., to Pelt & Hooykaas B.V. Process for and apparatus for recovering energy. 4,385,657, Cl. 165-1.000.
Horbach, Rainer: *See—*
Bitsch, Harald; Donner, Klaus; Horbach, Rainer; and Rump, Peter W., 4,385,562, Cl. 105-163.00R.
Hori, Takanobu; Arai, Fumio; and Kodama, Hisashi, to Aisin Seiki Kabushiki Kaisha. Self-contained hydraulic lash adjuster. 4,385,599, Cl. 123-90.580.
Horn, Herman: *See—*
Hacke, Walter; and Horn, Herman, 4,386,083, Cl. 424-227.000.
Horng, Cheng T.: *See—*
Chu, Shao-Fu; Ho, Allen P.; Horng, Cheng T.; and Kemlage, Bernard M., 4,385,975, Cl. 204-192.00E.
Hornle, Reinhold: *See—*
Bremer, Fritz; Kressner, Michael; Wolf, Karlheinz; Nonn, Konrad; Hornle, Reinhold; and Pape, Georg, 4,386,195, Cl. 528-73.000.
Horrobin, David F.; and Lieb, Julian. Treatment of disorders of inflammation and immunity and disorders associated with smooth muscle spasm and compositions therefor. 4,386,072, Cl. 424-127.000.
Horrocks, Lloyd A.; Dorman, Robert V.; and Dabrowiecki, Zbigniew M., to Ohio State University Research Foundation, The. Therapeutic agents for preventing phospholipid degradation and free fatty acid proliferation. 4,386,078, Cl. 424-180.000.
Hosaka, Akio, to Nissan Motor Company, Limited. Fuel supply control system for an internal combustion engine. 4,385,596, Cl. 123-488.000.
Hosaka, Akio, to Nissan Motor Company, Ltd. Fail-safe device in an electronic control system for an automotive vehicle. 4,386,427, Cl. 371-11.000.
Hoshi, Susumu: *See—*
Shiraki, Toshinori; Hoshi, Susumu; and Hayano, Fusakazu, 4,386,125, Cl. 428-36.000.
Hoshino, Shoji: *See—*
Ihara, Keisuke; Takayama, Atsushi; Tanioka, Susumu; Toda, Kazuo; Sasaki, Akiyosi; and Hoshino, Shoji, 4,385,553, Cl. 99-510.000.
Hoshino, Yoshinobu, to Mitsubishi Denki Kabushiki Kaisha. Flywheel apparatus for storing electrical energy. 4,385,845, Cl. 384-123.000.
Hosiden Electronics Co., Ltd.: *See—*
Aoki, Shigeo; Isogami, Shuzo; Tamamura, Junichi; Nagayoshi, Tatsuo; Yasui, Masaru; and Hirao, Susumu, 4,385,473, Cl. 51-281.00R.
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Hosiery Corporation of America, Inc.: *See—*
Veerkamp, Bernard H., 4,385,478, Cl. 53-118.000.
Hovis, Victor M., Jr.; Pullen, William C.; Kollie, Thomas G.; and Bell, Richard T., to United States of America, Energy. Corrosion-resistant uranium. 4,385,943, Cl. 148-31.500.
Hoya, Masaaki: *See—*
Takematsu, Tetsuo; Hoya, Masaaki; and Kaneshiki, Toshitaka, 4,385,927, Cl. 71-118.000.
Hsieh, Hsueh Y.; and Rabbat, Naguib B. G., to International Business Machines Corp. System and method for LSI circuit analysis. 4,386,403, Cl. 364-300.000.
Hubbard, Vance M.; and Brunson, Welton K., to Tecnol, Inc. Small ice packs and method of manufacturing the same. 4,385,950, Cl. 156-73.100.
Huber, Franz: *See—*
Gugel, Georg; and Huber, Franz, 4,385,523, Cl. 73-640.000.
Hughes Aircraft Company: *See—*
Schellenberg, James M., 4,386,324, Cl. 330-277.000.
Hughes, Jeffrey; and Keane, Kevin E., to Imperial Chemical Industries Limited. Liquid polyisocyanate compositions. 4,386,032, Cl. 260-453.0AM.
Hughes, Leslie R.: *See—*
Crossley, Neville S.; Glen, Alasdair T.; and Hughes, Leslie R., 4,386,080, Cl. 424-209.000.
Humphries, Joseph R.; and Knapp, Richard W., to Combustion Engineering, Inc. Variable overlap control. 4,386,048, Cl. 376-216.000.
Hundt & Weber Schaltgerate GmbH: *See—*
Neuser, Johannes, 4,386,253, Cl. 200-302.000.
Hungerford, William R., to Bendix Corporation, The. Lathe control system. 4,386,407, Cl. 364-474.000.
Hunkeler, Walter; and Kyburz, Emilio, to Hoffmann-La Roche Inc. Imidazo[1,5a][1,4]benzodiazepines. 4,386,028, Cl. 260-239.30P.
Hunt, Peter: *See—*
Sharpe, Raymond; Griffiths, Trevor J.; and Hunt, Peter, 4,385,894, Cl. 464-31.000.
Hunter, Richard E., Jr., to RCA Corporation. TV Interface RF modulation circuitry. 4,386,377, Cl. 358-335.000.
Huntron Instruments, Inc.: *See—*
Clinton, James R., 4,386,317, Cl. 324-158.00D.
Hupfer, Leopold: *See—*
Merger, Franz; Miesen, Ernest; Broecker, Franz J.; Schroeder, Wolfgang; Baer, Karl; Paetsch, Juergen; and Hupfer, Leopold, 4,386,018, Cl. 252-465.000.
Merger, Franz; Miesen, Ernest; Broecker, Franz J.; Schroeder, Wolfgang; Baer, Karl; Paetsch, Juergen; and Hupfer, Leopold, 4,386,219, Cl. 568-853.000.
Hurley, Michael G.: *See—*
Collins, Thomas W.; and Hurley, Michael G., 4,386,417, Cl. 365-12.000.
Hutchison, Stanley O., to Chevron Research Company. Packerless well completion assembly. 4,385,663, Cl. 166-378.000.
Hutchison. Stanley O., to Chevron Research Company. Frangible cup thermal packer assembly for cased wells. 4,385,664, Cl. 166-382.000.
Huthloff, Eckhard, to Bopp & Reuther GmbH. Flow meter. 4,385,526, Cl. 73-861.220.
Hyatt, John A.; and White, Alan W., to Eastman Kodak Company. Process for the preparation of aryl alkyl sulfones and aryl vinyl sulfones. 4,386,221, Cl. 568-28.000.
Hydraulic Servocontrols Corporation: *See—*
Robinson, William P., 4,385,642, Cl. 137-885.000.
Hypponen, Alpo. Packing element for a biological filter or for use in mass transfer. 4,385,988, Cl. 210-150.000.
I.P.U. Ltd.: *See—*
Hennecke, Franz, 4,385,750, Cl. 266-69.000.
Ichidate, Minoru; and Kubo, Toshihiko, to Sumitomo Metal Industries Limited. Method and apparatus for production of metal powder. 4,385,929, Cl. 75-0.50C.
Igarashi, Osamu; and Inui, Tomoji, to Hitachi, Ltd. Fuel level measuring method and apparatus of the same. 4,386,406, Cl. 364-442.000.
Igi, Keishiro: *See—*
Takahashi, Hideo; Igi, Keishiro; Ogawara, Hisashi; and Nakayasu, Haruo, 4,385,656, Cl. 164-525.000.
Ihara, Keisuke; Takayama, Atsushi; Tanioka, Susumu; Toda, Kazuo; Sasaki, Akiyosi; and Hoshino, Shoji, to Tokyo Electric Co., Ltd. Apparatus for separating liquid and residual solids. 4,385,553, Cl. 99-510.000.
Iida, Katsuyoshi: *See—*
Kobayashi, Kazuo; Tanaka, Hideki; Iida, Katsuyoshi; and Kamite, Junji, 4,385,616, Cl. 123-571.000.
Iizuka, Haruhiko: *See—*
Sugasawa, Fukashi; Iizuka, Haruhiko; Etoh, Yukihiro; and Tanaka, Toshiaki, 4,385,600, Cl. 123-198.00F.
Ikeda, Tomoaki: *See—*
Shinozaki, Fumiaki; Washizawa, Yasuo; Ikeda, Tomoaki; Nakao, Sho; and Kondoh, Syunichi, 4,386,153, Cl. 430-285.000.
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Tanei, Hirayoshi; Ikegami, Akira; Arima, Hideo; Isogai, Tokio; and Kawabata, Kiyoshi, 4,386,387, Cl. 361-321.000.
Illinois Tool Works Inc.: *See—*
Klygis, Mindaugas J., 4,385,691, Cl. 206-150.000.
Olsen, Robert C., 4,385,690, Cl. 206-150.000.
Imai, Tomoyasu: *See—*
Tomita, Tamaki; Suzuki, Ikuo; Imai, Tomoyasu; and Kitajima, Masato, 4,385,907, Cl. 51-296.000.
Imazeki, Ryoji; Yamazaki, Etsuo; Sasaki, Takao; and Yamaguchi, Masashi, to Fujitsu Fanuc Ltd. Tracer control system. 4,386,408, Cl. 364-474.000.
Imperial Chemical Industries Limited: *See—*
Cogswell, Frederic N.; Griffin, Brian P.; and Rose, John B., 4,386,174, Cl. 524-27.000.
Crossley, Neville S.; Glen, Alasdair T.; and Hughes, Leslie R., 4,386,080, Cl. 424-209.000.
Hughes, Jeffrey; and Keane, Kevin E., 4,386,032, Cl. 260-453.0AM.
Imperial Chemical Industries PLC: *See—*
Brittain, David R.; and Wood, Robin, 4,386,100, Cl. 424-273.00R.
Hogan, Philip J.; Stewart, Allan; and Whittam, Thomas V., 4,386,230, Cl. 585-467.000.
Inagaki, Yasaburo, to Nippon Electric Co., Ltd. Memory device. 4,386,421, Cl. 365-230.000.
Industrie Metallurgiche e Meccaniche S.A.I.M.M. S.p.A.: *See—*
Meloncelli, Giuseppe; and Ribetto, Carlo, 4,385,555, Cl. 100-19.00R.
Ing. C. Olivetti & C., S.p.A.: *See—*
Camosso, Mario, 4,385,848, Cl. 400-208.000.
Ingalls, Edgar J., deceased (by Ingalls, Lou Ellen S., Edith I. Hodgeson, Ellen I. Guidry, heirs); and Guidry, Eddie J., to Duzitall Equipment Corporation. Crayfish peeler. 4,385,422, Cl. 17-73.000.
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Ingalls, Edgar J., deceased; and Guidry, Eddie J., 4,385,422, Cl. 17-73.000.
Inglis, Leslie R.; and Peter, Joseph E., to Vortec Corporation. Flow-amplifying nozzle. 4,385,728, Cl. 239-424.000.
Ingram, Alvin R.: *See—*
Blommers, Elizabeth A.; Warfel, David R.; and Ingram, Alvin R., 4,386,133, Cl. 428-407.000.
Inomata, Koichiro; Hasegawa, Michio; Shimanuki, Senji; and Haga, Masakatsu, to Tokyo Shibaura Denki Kabushiki Kaisha. Amorphous magnetic alloy. 4,385,932, Cl. 75-123.00B.
Inoue-Japax Research Incorporated: *See—*
Inoue, Kiyoshi, 4,386,248, Cl. 219-69.00W.
Inoue, Kiyoshi, 4,386,256, Cl. 219-69.00M.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Electrical machining method and apparatus for forming a 3D surface contour in a workpiece with a traveling-wire electrode. 4,386,248, Cl. 219-69.00W.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Machining method and apparatus. 4,386,256, Cl. 219-69.00M.
Inoue, Takeshi: *See—*
Moriyama, Noboru; and Inoue, Takeshi, 4,385,903, Cl. 23-313.00R.
Insituform International, Inc.: *See—*
Wood, Eric, 4,385,885, Cl. 425-387.100.

Institut Textile de France: *See*—
Thomas, Jean; Laneres, Jacques; and Leonard, Jean P., 4,385,450, Cl. 34-21.000.
Instranetics, Inc.: *See*—
Eldridge, John D., Jr., 4,385,692, Cl. 206-363.000.
INTELSAT: *See*—
Virupaksha, Krishnamoorthy; and Suyderhoud, Henri G., 4,386,237, Cl. 179-15.55R.
International Business Machines Corporation: *See*—
Chesarek, Donald J., 4,386,266, Cl. 235-380.000.
Chu, Shao-Fu; Ho, Allen P.; Horng, Cheng T.; and Kemlage, Bernard M., 4,385,975, Cl. 204-192.00E.
Collins, Thomas W.; and Hurley, Michael G., 4,386,417, Cl. 365-12.000.
Cope, Bernard; Lynch, Kenneth R.; O'Donnell, Daniel H.; Rodell, John T.; Turechek, William W.; and Unterberger, Robert M., 4,386,400, Cl. 364-200.000.
Dillan, George O., 4,386,333, Cl. 336-107.000.
Ehrsam, William F.; Elander, Robert C.; Matyas, Stephen M.; Meyer, Carl H. W.; Powers, Robert L.; Prentice, Paul N.; Smith, John L.; and Tuchman, Walter L., 4,386,234, Cl. 178-22.090.
Hsieh, Hsueh Y.; and Rabbat, Naguib B. G., 4,386,403, Cl. 364-300.000.
Ju, Kochan, 4,386,418, Cl. 365-36.000.
Levine, James L., 4,386,346, Cl. 340-709.000.
Nair, Krishna K.; and Snyder, Keith A., 4,386,116, Cl. 427-99.000.
Regehr, John L.; and Schloss, Phillip C., 4,386,359, Cl. 346-35.000.
International Flavors & Fragrances Inc.: *See*—
Boden, Richard M., 4,386,063, Cl. 424-49.000.
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,386,064, Cl. 424-49.000.
Sprecker, Mark A.; and Hall, John B., 4,386,023, Cl. 252-522.00R.
International Minerals & Chemical Corp.: *See*—
Dancy, William B.; and Nichols, Kenneth L., 4,385,920, Cl. 71-36.000.
International Standard Electric Corporation: *See*—
Philipp, Gerd; Ramsaier, Manfred; and Schach, Albert, 4,386,240, Cl. 179-90.00K.
International Telephone and Telegraph Corporation: *See*—
Treiber, Robert, 4,386,430, Cl. 375-14.000.
Intichar, Lutz; Schnapper, Christoph; and Weghaupt, Erich, to Siemens Aktiengesellschaft. Device for cooling a superconducting field winding and a damper shield of the rotor of an electric machine. 4,386,289, Cl. 310-52.000.
Intrusion-Prepakt, Incorporated: *See*—
Bindhoff, Eduardo W., 4,385,648, Cl. 139-384.00R.
Inui, Taiji: *See*—
Oki, Toshikazu; Yoshimoto, Akihiro; Kouno, Kageaki; Inui, Taiji; Takeuchi, Tomio; and Umezawa, Hamao, 4,386,198, Cl. 536-6.400.
Inui, Tomoji: *See*—
Igarashi, Osamu; and Inui, Tomoji, 4,386,406, Cl. 364-442.000.
Irvin Industries Inc.: *See*—
Gulette, Ronald S.; Gavagan, James A.; Petersen, Carl M., III; and Squires, Steven L., 4,385,737, Cl. 242-107.700.
Petersen, Carl M., III, 4,385,424, Cl. 24-230.00A.
Irvine Optical Corporation: *See*—
Schram, Richard R., 4,385,837, Cl. 356-387.000.
Ishihara Sangyo Kaisha, Ltd.: *See*—
Kishino, Shigeru; Yasui, Shigeo; Takahata, Kei; and Ohkawa, Masakuni, 4,386,146, Cl. 430-95.000.
Ishii, Takashi: *See*—
Nagasawa, Ikuo; Mukae, Kazuo; Tsuda, Koichi; Ishii, Takashi; and Sakaguchi, Toyoshige, 4,386,022, Cl. 252-521.000.
Ishizuka, Hiroshi. Ultrahigh pressure apparatus. 4,385,881, Cl. 425-77.000.
Ishizuka, Ryuichi: *See*—
Akashi, Kazuo; Yoshida, Toyonobu; and Ishizuka, Ryuichi, 4,386,258, Cl. 219-121.0PM.
Iso, Tadashi: *See*—
Iwao, Junichi; Oya, Masayuki; Baba, Toshio; Iso, Tadashi; and Chiba, Takehisa, 4,386,096, Cl. 424-270.000.
Isogai, Tokio: *See*—
Tanei, Hirayoshi; Ikegami, Akira; Arima, Hideo; Isogai, Tokio; and Kawabata, Kiyoshi, 4,386,387, Cl. 361-321.000.
Isogami, Shuzo: *See*—
Aoki, Shigeo; Isogami, Shuzo; Tamamura, Junichi; Nagayoshi, Tatsuo; Yasui, Masaru; and Hirao, Susumu, 4,385,473, Cl. 51-281.00R.
Istituto de Angeli S.p.A.: *See*—
Cereda, Enzo; Donetti, Arturo; del Soldato, Piero; and Bergamaschi, Mario, 4,386,099, Cl. 424-273.00R.
Itai, Humio, to Tokyo Shibaura Denki Kabushiki Kaisha. Magnetic reproducing apparatus. 4,386,381, Cl. 360-74.200.
Itani, Takuo: *See*—
Iwata, Shouji; Tanaka, Masaru; Yamashita, Fumio; Kurobe, Hideharu; and Itani, Takuo, 4,385,486, Cl. 57-58.520.
Ito, Hisashi, to Casio Computer Company, Ltd. Calculator with equation display device. 4,386,412, Cl. 364-710.000.
Itoh, Masanori; and Tanaka, Minoru, to Fujitsu Limited. Gas discharge panel device. 4,386,297, Cl. 315-169.400.
Itoh, Masayuki, to Canon Kabushiki Kaisha. Toner image fixing device. 4,385,826, Cl. 355-14.0FU.
Itou, Hiroshi; Watanabe, Haruo; Tateno, Hidenori; and Kobushi, Mamoru, to Toyota Jidosha Kogyo Kabushiki Kaisha. Rotational speed control device during idling of engine. 4,385,602, Cl. 123-339.000.
Iversen, Ralph T.: *See*—
Baur, Robert; and Iversen, Ralph T., 4,385,792, Cl. 339-36.000.
Iverson, Jacob E., to McKane, Thomas D.; and Burt, John H., part interest to each. Hydraulic unloader. 4,385,640, Cl. 137-117.000.
Iwao, Junichi; Oya, Masayuki; Baba, Toshio; Iso, Tadashi; and Chiba, Takehisa, to Santen Pharmaceutical Co., Ltd. Antihypertensive 4-thiazolidinecarboxylic acids (furyl and thienyl derivatives). 4,386,096, Cl. 424-270.000.
Iwasaki, Masayuki: *See*—
Sato, Fumihiro; Iwasaki, Masayuki; Terada, Takashi; Ninomiya, Hiroshi; and Nakada, Minoru, 4,386,120, Cl. 427-213.000.
Iwasawa, Terno, to Olympus Optical Co., Ltd. Control device for a multispeed motor. 4,386,302, Cl. 318-318.000.
Iwata, Masao: *See*—
Nakata, Hiroshi; and Iwata, Masao, 4,385,617, Cl. 123-602.000.
Iwata, Shouji; Tanaka, Masaru; Yamashita, Fumio; Kurobe, Hideharu; and Itani, Takuo, to Tokusen Kogyo Kabushiki Kaisha. Apparatus for manufacturing opes cord. 4,385,486, Cl. 57-58.520.
Izawa, Kouji: *See*—
Nakamura, Yashushi; Ohtombe, Ko; and Izawa, Kouji, 4,386,432, Cl. 382-7.000.
J. D. Moller Optische Werke GmbH: *See*—
Klein, Friedrich; Burmeister, Joachim; and Warming, Nils, 4,385,813, Cl. 351-217.000.
J. I. Case Company: *See*—
Fralish, Mark R., 4,385,457, Cl. 37-250.000.
J. & P. Coats, Limited: *See*—
Sully, Lance; and Jackson, Ian T., 4,385,404, Cl. 3-1.910.
Jacklich, John R., to Simpson-DuraVent. Flue pipe for fireplace stove. 4,385,623, Cl. 126-126.000.
Jackson, Ian T.: *See*—
Sully, Lance; and Jackson, Ian T., 4,385,404, Cl. 3-1.910.
Jacoby, Philip, to Standard Oil Company (Indiana). Porous polymeric films. 4,386,129, Cl. 428-215.000.
Jagenberg-Werke AG: *See*—
Zodrow, Rudolf; Rosenberg, Heinz J.; and Buchholz, Rainer, 4,385,960, Cl. 156-568.000.
Jaisinghani, Rajan A.; and Sprenger, Gregory S., to Nelson Industries, Inc. Gravity separator for separating liquids. 4,385,986, Cl. 210-123.000.
James, Richard N.; and Goodale, Kenneth S., to Dysan Corporation. Apparatus for processing a flexible magnetic recording medium. 4,385,587, Cl. 118-50.000.
James River-Dixie/Northern, Inc.: *See*—
Pauls, Walter L.; and Dunleavy, Raymond A., III, 4,385,954, Cl. 156-244.210.
Jan De Coster, Pieter K.: *See*—
Daenen, Robert H. C. M.; and Jan De Coster, Pieter K., 4,385,554, Cl. 99-645.000.
Jancy Engineering Co.: *See*—
Strange, Robert E.; and Morris, Charles F., 4,385,853, Cl. 408-68.000.
Jansen, Gerardus L. M., to U.S. Philips Corporation. Arrangement for synchronizing the phase of a local clock signal with an input signal. 4,386,323, Cl. 328-63.000.
Japan Synthetic Rubber Co., Ltd.: *See*—
Kotani, Teizo; Enyo, Hiroji; Tanaka, Minoru; Takemura, Yasuhiko; and Miyabayashi, Toshio, 4,386,181, Cl. 524-304.000.
Jarach, Roberto. Dampening device for offset printing machines for alternate and selective utilization of water or of a water-alcohol mixture. 4,385,559, Cl. 101-148.000.
Javeri, Rupin J.: *See*—
Petrie, Adelore F.; and Javeri, Rupin J., 4,385,605, Cl. 123-414.000.
Jeffers, Eldon L.: *See*—
United States of America, National Aeronautics and Space Administration; Nishioka, Kenji; Nibley, David A.; Jeffers, Eldon L.; and Brooks, Richard L., 4,386,157, Cl. 435-39.000.
Jenkins, James L. Composition for treating masonry materials. 4,386,004, Cl. 252-145.000.
Jensen, James R.: *See*—
Olsen, Robert C.; and Jensen, James R., 4,385,721, Cl. 229-32.000.
Jentzsch, Arndt: *See*—
Johne, Hans; Jentzsch, Arndt; Muller, Wolfgang; Forster, Karl-Heinz; and Schuck, Helmut, 4,385,560, Cl. 101-365.000.
JEOL Ltd.: *See*—
Takeuchi, Makoto; Yoshida, Ekuo; and Kohno, Masahiro, 4,386,054, Cl. 422-63.000.
Jeter, John D.: *See*—
Mumby, Edward S.; and Jeter, John D., 4,386,422, Cl. 367-85.000.
Jochem, Cornelis M. G.; and Severin, Petrus J. W., to U.S. Philips Corporation. Method of producing an optical fiber having a core which has a noncircular cross-section, and double crucible for use in this method. 4,385,916, Cl. 65-3.130.
Joerns Furniture Company: *See*—
Damico, Frank M., 4,385,414, Cl. 16-35.00R.
Johansson, Hans E.: *See*—
Svending, Per J.; Batelson, Per G.; Johansson, Hans E.; and Larsson, Hans M., 4,385,961, Cl. 162-175.000.
Johansson, Karl N.: *See*—
Helgstrand, Ake J. E.; Johansson, Karl N.; Misiorny, Alfons; Noren, Jan O.; and Stening, Goran B., 4,386,081, Cl. 424-212.000.
Johne, Hans; Jentzsch, Arndt; Muller, Wolfgang; Forster, Karl-Heinz; and Schuck, Helmut, to Veb Kombinat Polygraph "Werner Lamberz" Leipzig. Remote adjustment and measuring unit for ink zoning

screw of a doctor blade mechanism in an ink fountain of a printing machine. 4,385,560, Cl. 101-365.000.

Johnson, Roger C.; Stewart, Donald L., Jr.; Tsao, Utah; and Wohleber, David A., to Aluminum Company of America. Method for preventing the undesirable condensation of aluminum chloride in a fractional distillation column. 4,385,964, Cl. 203-50.000.

Jones, Robert F., to B. F. Goodrich Company, The. Positioner and slitter for laminar material. 4,386,273, Cl. 250-548.000.

Jordan, David D., to Bendix Corporation, The. Hydraulic control apparatus. 4,385,898, Cl. 464-101.000.

Jordan, Robert E., to Cutter Laboratories, Inc. Method of preparing antithrombin. 4,386,025, Cl. 260-112.00B.

Ju, Kochan, to International Business Machines Corporation. Conductorless swap gate for ion-implanted contiguous-disk bubble devices. 4,386,418, Cl. 365-36.000.

Jung, Johann: *See*—
Rentzea, Costin; Feuerherd, Karl-Heinz; Zech, Bernd; and Jung, Johann, 4,385,925, Cl. 71-92.000.

Jungmann, Karl-Heinz: *See*—
Conrad, Willibrod; and Jungmann, Karl-Heinz, 4,385,681, Cl. 188-79.50B.

Kabushiki Kaisha Daini Seikosha: *See*—
Murakami, Fumikazu; and Funayama, Shizuo, 4,386,244, Cl. 179-179.000.
Sasaki, Seiko; and Asano, Kazuhiro, 4,386,423, Cl. 368-73.000.

Kabushiki Kaisha Kobe Seiko Sho: *See*—
Nagai, Yasuhiro; Kashimura, Toshisada; Kaita, Kunio; and Kawaberi, Tetsuro, 4,386,259, Cl. 219-137.00R.

Kabushiki Kaisha Nippon Coinco: *See*—
Sugimoto, Osamu; and Takizawa, Masayoshi, 4,385,684, Cl. 194-100.00A.

Kabushiki-Kaisha, Tokai-Rika-Denki-Seisakusho: *See*—
Tanaka, Koubun; and Kawaharazaki, Takashi, 4,385,425, Cl. 24-230.00A.

Kachelries, Robert W., to Du Pont de Nemours, E. I., and Company. Automatic velocity and position controller for a film processor. 4,385,821, Cl. 354-319.000.

Kaempen, Charles E., to Plastonics International Inc. Composite laminate joint structure and method and apparatus for making same. 4,385,644, Cl. 138-109.000.

Kaiser, Hans-Georg: *See*—
Dolata, Hans; Meyle, Werner; Kaiser, Hans-Georg; Odenwald, Gerhard; and Weyda, Gunther, 4,385,532, Cl. 76-25.00A.

Kaita, Kunio: *See*—
Nagai, Yasuhiro; Kashimura, Toshisada; Kaita, Kunio; and Kawaberi, Tetsuro, 4,386,259, Cl. 219-137.00R.

Kajihara, Tetsuo: *See*—
Matsumoto, Hiromi; Uehori, Yuji; Kajihara, Tetsuo; and Nakano, Tsuneo, 4,385,512, Cl. 72-234.000.

Kalmowitz, Sheldon; Beigel, Regis; Sutphin, Eldon; and McGhee, Charles, to Energy Electronics, Inc. Apparatus and method for detecting the presence of a heat-emitting body. 4,386,275, Cl. 250-342.000.

Kamatics Corporation: *See*—
Wirth, Charles J., 4,385,895, Cl. 464-69.000.

Kamite, Junji: *See*—
Kobayashi, Kazuo; Tanaka, Hideki; Iida, Katsuyoshi; and Kamite, Junji, 4,385,616, Cl. 123-571.000.

Kansai, Masakuni. Method of producing methane. 4,386,159, Cl. 435-167.000.

Kanazawa, Takaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Rotary compressor with fluid diode check value for lubricating pump. 4,385,875, Cl. 418-63.000.

Kanbe, Junichiro, to Canon Kabushiki Kaisha. Method and apparatus for forming and recording composite images. 4,385,822, Cl. 355-3.00R.

Kandler, Joachim: *See*—
Maurer, Alexander; Adrian, Renate; Wasel-Nielen, Horst-Dieter; Sorbe, Gunter; and Kandler, Joachim, 4,386,024, Cl. 252-523.000.

Kanegae, Hidetoshi: *See*—
Masaki, Kenji; and Kanegae, Hidetoshi, 4,385,612, Cl. 123-489.000.

Kaneko, Tamaki, to Ricoh Co., Ltd. Copying apparatus. 4,385,825, Cl. 355-3.0SH.

Kaneshiki, Toshitaka: *See*—
Takematsu, Tetsuo; Hoya, Masaaki; and Kaneshiki, Toshitaka, 4,385,927, Cl. 71-118.000.

Kao Soap Co., Ltd.: *See*—
Moriyama, Noboru; and Inoue, Takeshi, 4,385,903, Cl. 23-313.00R.

Kapiloff, Anita G.; and Hatch, Randolph T., to Chemical Sciences, Inc. Scale inhibitor for reverse osmosis water purification system. 4,386,005, Cl. 252-180.000.

Karasawa, Setsuyuki; Aso, Minosaku; Goto, Yoshinori; and Nikaido, Akira, to Rhythm Watch Co., Ltd.; and Citizen Watch Co., Ltd. Synchronous motor for timepiece. 4,386,287, Cl. 310-49.00R.

Karl Mayer Testilmaschinenfabrk GmbH: *See*—
Mista, Kresimir, 4,385,506, Cl. 66-84.00A.

Kartman, Helge C. C., to F. L. Smidth & Co. Roller mill. 4,385,730, Cl. 241-57.000.

Kasahara, Hideo: *See*—
Fukuda, Kunio; and Kasahara, Hideo. 4,386,176, Cl. 525-68.000.

Kasai, Teruaki: *See*—
Ejiri, Takeshi; Tanaka, Seiichi; Kasai, Teruaki; Komatsuzaki, Masao; and Masuda, Satoru, 4,385,529, Cl. 74-535.000.

Kashimura, Toshisada: *See*—
Nagai, Yasuhiro; Kashimura, Toshisada; Kaita, Kunio; and Kawaberi, Tetsuro, 4,386,259, Cl. 219-137.00R.

Kasper, George P.; Kroll, Arthur S.; and Mosehauer, Michael, to Eastman Kodak Company. Method and means for improving maximum density and tonal range of electrographic images. 4,385,823, Cl. 355-3.00R.

Kastening, Bertel; Faul, Wolfgang; Furst, Leander; and Holzer, Walter, to Kernforschungsanlage Julich Gesellaschaft mit beschrankter Haftung; and Elo-Chem Atztechnik GmbH. Method of regenerating an ammoniacal etching solution. 4,385,969, Cl. 204-105.00R.

Kato, Masaaki, to Nippondenso Co., Ltd. Fuel injection system for internal combustion engines. 4,385,609, Cl. 123-446.000.

Kaufhold, Manfred: *See*—
Muller, Wolfgang H. E.; and Kaufhold, Manfred, 4,385,965, Cl. 203-75.000.

Kaufman, Benjamin J.: *See*—
Sawicki, Robert A.; and Kaufman, Benjamin J., 4,385,904, Cl. 44-56.000.

Kaufmann, John H., to Global Coatings Limited. Roof coating composition and construction. 4,386,136, Cl. 428-451.000.

Kaun, Thomas D.; and Kilsdonk, Dennis J., to United States of America, Energy. Method of making electrodes for electrochemical cell. 4,386,019, Cl. 252-503.000.

Kawabata, Kiyoshi: *See*—
Tanei, Hirayoshi; Ikegami, Akira; Arima, Hideo; Isogai, Tokio; and Kawabata, Kiyoshi, 4,386,387, Cl. 361-321.000.

Kawaberi, Tetsuro: *See*—
Nagai, Yasuhiro; Kashimura, Toshisada; Kaita, Kunio; and Kawaberi, Tetsuro, 4,386,259, Cl. 219-137.00R.

Kawada, Shigeo; Akaku, Fumiyoshi; and Yukawa, Seiki, to Honda Giken Kogyo Kabushiki Kaisha; Sumitomo Electric Industries, Ltd.; and Tokai Electric Wire Company, Limited. Wiring harness for motorcycles. 4,386,278, Cl. 307-9.000.

Kawaharazaki, Takashi: *See*—
Tanaka, Koubun; and Kawaharazaki, Takashi, 4,385,425, Cl. 24-230.00A.

Kawai Musical Instrument Mfg. Co., Ltd.: *See*—
Deutsch, Ralph; and Deutsch, Leslie J., 4,385,542, Cl. 84-1.230.

Kawai, Toshikazu; Maruyama, Yutaka; Negishi, Junji; and Negishi, Akira, to Central Glass Company Limited. Method of purifying hexafluoroacetone containing chlorofluoroacetones. 4,386,223, Cl. 568-411.000.

Kawamura, Masato: *See*—
Kinomoto, Shinichi; Kawamura, Masato; and Kobayashi, Susumu, 4,386,336, Cl. 338-35.000.

Kawamura, Noriaki: *See*—
Doi, Yuzuru; and Kawamura, Noriaki, 4,385,832, Cl. 356-73.100.

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Takahashi, Hideo; Igi, Keishiro; Ogawara, Hisashi; and Nakayasu, Haruo, 4,385,656, Cl. 164-525.000.

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Fujimaki, Hiroto; Ajima, Shigetoshi; and Watanabe, Kazuhiro, 4,386,168, Cl. 523-155.000.

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Sumikawa, Yasushi; Seitoh, Hisao; and Kuroda, Masahiro, 4,385,654, Cl. 152-209.00R.

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Danz, Peter, 4,385,626, Cl. 128-17.000.

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Laneres, Jacques: *See*—
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Cutler, Timothy D.; and Titus, Theodore, IV, 4,386,382, Cl. 360-92.000.

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Laurie, William H., to Superior Electric Company, The. Stepping motors having detented winding and winding method. 4,386,288, Cl. 310-49.00R.

Lautenschlager, Hans-Heiner: *See*—
Hilboll, Gerd; Lautenschlager, Hans-Heiner; Stoll, Brigitte; and Probst, Manfred, 4,386,031, Cl. 260-404.000.

Lavallee, David K., to Research Foundation of the City University of New York. N-Substituted metalloporphyrins as anti-tumor agents against PS-P-388(P388) leukemia in animals. 4,386,087, Cl. 424-245.000.

Lavorel, Lucien: *See*—
Albertin, Michel; and Lavorel, Lucien, 4,385,641, Cl. 137-636.100.

Lazzari, Jean-Pierre: *See*—
Desserre, Jacques; Helle, Michel; and Lazzari, Jean-Pierre, 4,386,383, Cl. 360-126.000.

Le Berre, Serge: *See*—
Perbet, Jean-Noel; Hareng, Michel; and Le Berre, Serge, 4,385,807, Cl. 350-350.00S.

Leblanc, Jean, to Robert Bosch GmbH. Fuel injection pump for combustion engines. 4,385,610, Cl. 123-447.000.

Lebowitz, Sam, to Copco, Inc. Teakettle having whistle cap. 4,385,585, Cl. 116-67.00R.

Lechner, Kurt W.: *See*—
O'Brien, Terry R.; and Lechner, Kurt W., 4,386,335, Cl. 337-261.000.

Leclercq, Philippe; and Luternauer, Jacques, to Produits Chimiques Ugine Kuhlmann. Process for the preparation of sulfamic acid. 4,386,060, Cl. 423-389.000.

Lee, Alan S., to English Electric Company Limited, The. Turbine. 4,385,492, Cl. 60-398.000.

Lee, Kap-Joong. Building heating system. 4,385,625, Cl. 126-433.000.

Lee, Richard J. Cartridge reloading dies. 4,385,546, Cl. 86-36.000.

Lefort, Emmanuel: *See*—
Ferrieu, Gilbert M. M.; Lefort, Emmanuel; and Moliere, Francoise, 4,386,236, Cl. 179-1.0VL.

Leich, Rolf: *See*—
Braun, Kurt; Laupp, Gerhard; Leich, Rolf; Saur, Walter; Scheifele, Horst; and Schick, Jurgen, 4,385,670, Cl. 177-1.000.

Leiter, L. David, to West Company, The. Composite tip-off container cap. 4,385,707, Cl. 215-253.000.

Lemelson, Jerome H. Shock wave processing apparatus. 4,385,880, Cl. 425-77.000.

Lenker, Don H.; and Nascimento, Dennis F., to United States of America, Agriculture. Vibrating separator. 4,385,702, Cl. 209-629.000.

Lenzen, Jakob: *See*—
Raasch, Hans; Lenzen, Jakob; and Pohl, Klaus, 4,385,488, Cl. 57-417.000.

Leonard, Gary S., to Carrier Corporation. Fluid temperature measuring device. 4,385,658, Cl. 165-11.000.

Leonard, Jean P.: *See*—
Thomas, Jean; Laneres, Jacques; and Leonard, Jean P., 4,385,450, Cl. 34-21.000.

Leroy, Pierre J.; Deschamps, Maurice; and Sprunck, Emile, to Creusot-Loire; and Sprunck, Emile. Tuyere for the simultaneous and separate introduction of at least one gas and one powder material. 4,385,753, Cl. 266-268.000.

Lever Brothers Company: *See*—
Van Heteren, Jan; Pronk, Jacobus N.; Smeenk, Willem J.; and Vermaas, Leo F., 4,386,111, Cl. 426-603.000.

Levine, James L., to International Business Machines Corporation. Cursor controller. 4,386,346, Cl. 340-709.000.

Leviton Manufacturing Company, Inc.: *See*—
Doyle, Richard C.; and Rivera, Lester, 4,386,338, Cl. 340-310.00A.

Lewin, Arthur; and Nickel, Bernd, to Siemens Aktiengesellschaft. Device for measuring the location, the attitude and/or a change of location or attitude of the lower jaw of a patient. 4,386,405, Cl. 364-415.000.

Libutti, Bruce L.: *See*—
Sexsmith, David R.; and Libutti, Bruce L., 4,386,008, Cl. 252-389.00R.

Lieb, Julian: *See*—
Horrobin, David F.; and Lieb, Julian, 4,386,072, Cl. 424-127.000.

Liggett Group Inc.: *See*—
Hall, Floyd V., 4,385,536, Cl. 82-52.000.

Ligotti, Eugene F. Dental apparatus for preventing loss of precious metal particles. 4,385,891, Cl. 433-92.000.

Lindenschmidt, Gerhard: *See*—
Naarmann, Herbert; Penzien, Klaus; Brandstetter, Franz; Lindenschmidt, Gerhard; and Seiler, Erhard, 4,386,203, Cl. 544-219.000.

Link, William T.; Fritsche, Joel L.; and Crisp, Donald E., to Raychem Corporation. Calibrated cable connector crimping tool and method of use. 4,385,515, Cl. 72-416.000.

Lisi, John E.: *See*—
Goffredi, Albert S.; Lisi, John E.; and Edwards, Ralston G., Jr., 4,385,919, Cl. 65-109.000.

Livernois, Jean; and Blais, Rolland. Preformed lining component for skate boots and the like. 4,385,456, Cl. 36-115.000.

Lobeck, Walter G., Jr.: *See*—
Temple, Davis L., Jr.; and Lobeck, Walter G., Jr., 4,386,091, Cl. 424-250.000.

Locatell, Louis, Jr.; Rogers, Howard G.; Bilofsky, Ruth C.; Ciecuch, Ronald F.; and Zepp, Charles M., to Polaroid Corporation. Magenta dye developers. 4,386,216, Cl. 549-394.000.

Loffelman, Frank F., to American Cyanamid Company. Light stabilizers for polymers containing hindered piperidinyl-substituted 1,3,5 triazine groups. 4,386,177, Cl. 524-100.000.

Loftis, James R.; and Starr, Myron C., to United Technologies Corporation. Hinge assembly having an L-shaped locking tab. 4,385,418, Cl. 16-381.000.

Logsdon, Daniel D., to Logsdon Foundation, The. Decorative escutcheon capable of inhibiting the propagation of noise. 4,385,777, Cl. 285-12.000.

Logsdon Foundation, The: *See*—
Logsdon, Daniel D., 4,385,777, Cl. 285-12.000.

Lok, Brent M.: *See*—
Wilson, Stephen T.; Lok, Brent M.; and Flanigen, Edith M., 4,385,994, Cl. 210-689.000.

Lomnes, Randy K.: *See*—
Burbank, Max B.; Lomnes, Randy K.; Vrba, Jiri; and Fife, Alistair A., 4,386,318, Cl. 324-244.000.

Long, George R., to Du Pont de Nemours, E. I., and Company. Label cassette and system for mounting same. 4,385,958, Cl. 156-361.000.

Long, William E.: *See*—
Mason, Leslie F. A.; Kitzing, Rainer; Whitear, Brian R. D.; Long, William E.; Wood, Glenn P.; and Reeves, David L. R., 4,386,149, Cl. 430-213.000.

Loots, Francois P.: *See*—
Van Landeghem, Willy K.; De Maayer, Petrus J.; Loots, Francois P.; Pattyn, Hendrik A.; Bauer, Walter; Farber, Heinrich; Muller, Jurgen; and Schmidt, Manfred, 4,386,431, Cl. 378-187.000.

Lovrenich, Rodger T., to Cooper Industries, Inc. Electrical adaptor block. 4,385,791, Cl. 339-17.00C.

Lowdenslager, John R., to Timex Corporation. Method and system for two-dimensional traveling display and driver circuits therefore. 4,386,351, Cl. 340-768.000.

Lucas Industries Limited: *See*—
Conrad, Willibrod; and Jungmann, Karl-Heinz, 4,385,681, Cl. 188-79.50B.
Sharpe, Raymond; Griffiths, Trevor J.; and Hunt, Peter, 4,385,894, Cl. 464-31.000.

Lucius, John E., to AMP Incorporated. Insulation displacement terminal. 4,385,794, Cl. 339-97.00R.

Lukens, Inc.: *See*—
Clevely, Robert E., 4,385,928, Cl. 75-3.000.

Lull, David L.: *See*—
Ackerman, Alfred J.; and Lull, David L., 4,386,189, Cl. 525-358.000.

Lundblad, John L.: *See*—
Mitra, Gautam; and Lundblad, John L., 4,386,068, Cl. 424-101.000.

Luternauer, Jacques: *See*—
Leclercq, Philippe; and Luternauer, Jacques, 4,386,060, Cl. 423-389.000.

Luthje, Holger: *See*—
Harms, Margret; and Luthje, Holger, 4,386,114, Cl. 427-47.000.

Lynch, Kenneth R.: *See*—
Cope, Bernard; Lynch, Kenneth R.; O'Donnell, Daniel H.; Rodell, John T.; Turechek, William W.; and Unterberger, Robert M., 4,386,400, Cl. 364-200.000.

Macdonell, Gary D.; and Stacy, Carl J., to Phillips Petroleum Company. Phosphonates as silica-to-rubber coupling agents. 4,386,185, Cl. 524-566.000.

MacGilp, Neil A.: *See*—
Turner, John C.; Dovey, Anthony; and MacGilp, Neil A., 4,386,000, Cl. 252-8.800.

Machida, Haruhiko; and Sakata, Shinji, to Yamasa Shoyu Kabushiki Kaisha. (E)-5-(2-Halogenovinyl)-arabinofuranosyluracil, process for preparation thereof, and uses thereof. 4,386,076, Cl. 424-180.000.

Machida, Kazumichi: *See*—
Shimada, Wataru; Machida, Kazumichi; and Okada, Masaru, 4,385,720, Cl. 228-166.000.

Mackey, Patrick J. Method of releasably coupling articulated vehicles and preventing jack-knifing. 4,385,772, Cl. 280-432.000.

Madderra, Jimmy M., to United States of America, Army. Launch tube bore rider. 4,385,561, Cl. 102-523.000.

Made Italiana s.r.l: *See*—
Borgo, Eraldo, 4,386,077, Cl. 424-180.000.

Maeda, Kyoichi, to Seikosha Co., Ltd. Piezoelectric loudspeaker. 4,386,241, Cl. 179-110.00A.

Magenheimer, John J.: *See*—
Berger, Michael; Byers, Charles H.; and Magenheimer, John J., 4,386,151, Cl. 430-228.000.

Mallet, Bernard, to NADELLA. Assembly of a driving element with coupling means. 4,385,897, Cl. 464-89.000.

Malyshev, Vitaly P.: *See*—
Abishev, Dzhantore N.; Buketov, Evnei A.; Baltynova, Nazymkul; Malyshev, Vitaly P.; Oralov, Turabai A.; Sakpanov, Egizbai S.; Kobzhasov, Abubakir K.; and Orazalina, Kazken N., 4,386,061, Cl. 423-571.000.

Mamadzhanov, Ulmas D.; Bakhir, Vitold M.; and Alekhin, Stanislav A. Method of maintaining preset parameters of drilling mud. 4,385,666, Cl. 175-40.000.

Manassen, Joost: *See*—
Hodes, Gary; Manassen, Joost; and Cahen, David, 4,386,142, Cl. 429-111.000.

Manber, Solomon: *See*—
Chiang, David; Chu, Mosi; and Manber, Solomon, 4,386,271, Cl. 250-234.000.

Mannesmann Demag AG: *See*—
Bitsch, Harald; Donner, Klaus; Horbach, Rainer; and Rump, Peter W., 4,385,562, Cl. 105-163.00R.

Manning, David T.; and Durden, John A., to Union Carbide Corporation. Method for controlling ectoparasitic Acarina. 4,386,086, Cl. 424-244.000.

Manthey, David M.: *See*—
Champlin, Bruce E.; and Manthey, David M., 4,385,695, Cl. 206-443.000.

Marathon Electric Manufacturing Corp.: *See*—
Monette, Gerald J., 4,386,290, Cl. 310-68.00E.

Maresca, Louis M.; and Matzner, Markus, to Union Carbide Corporation. Process for preparing polyarylates. 4,386,186, Cl. 525-68.000.

Margolis, Jerry, to Metaframe, Inc. Filter assembly and cartridge therefor. 4,385,989, Cl. 210-169.000.

Marsh, Walter H. W., to Singer Company, The. Presser foot and shank design (snap-on). 4,385,576, Cl. 112-240.000.

Martin, Eugene G., to Victor F. Weaver, Inc. Poultry leg/back processor. 4,385,421, Cl. 17-52.000.

Martin Marietta Corporation: *See*—
Patton, Paul D., 4,386,357, Cl. 343-700.0MS.

Maruyama, Yutaka: *See*—
Kawai, Toshikazu; Maruyama, Yutaka; Negishi, Junji; and Negishi, Akira, 4,386,223, Cl. 568-411.000.

Masaki, Kenji; and Kanegae, Hidetoshi, to Nissan Motor Company, Limited. Air-fuel ratio control system for internal combustion engines. 4,385,612, Cl. 123-489.000.

Mask, E. Dale: *See*—
Mattox, E. Michael; Mask, E. Dale; and Beeding, Jack D., 4,385,760, Cl. 272-131.000.

Mason, Leslie F. A.; Kitzing, Rainer; Whitear, Brian R. D.; Long, William E.; Wood, Glenn P.; and Reeves, David L. R., to Ciba-Geigy AG. Process for the production of photographic images by dye diffusion transfer and photographic material suitable in this process. 4,386,149, Cl. 430-213.000.

Maspero, Carlo, to Camoga S.a.S. di Mascetti Attilio & C. Automatically and semiautomatically unjamming nail selection device, designed particularly for machines riveting footwear heel seats onto corresponding heels. 4,385,712, Cl. 221-13.000.

Massacci, Angelo: *See*—
Quaglia, Giovanni B.; and Massacci, Angelo, 4,386,161, Cl. 435-269.000.

Masse, Lucien; Medlin, William L.; and Sexton, James H., to Mobil Oil Corporation. Strain and phase detection for rock materials under oscillatory loading. 4,385,520, Cl. 73-579.000.

Mastercrafters Corporation: *See*—
Davidson, Samuel L., 4,385,580, Cl. 114-201.00R.

Masuda, Satoru: *See*—
Ejiri, Takeshi; Tanaka, Seiichi; Kasai, Teruaki; Komatsuzaki, Masao; and Masuda, Satoru, 4,385,529, Cl. 74-535.000.

Masuda, Yoshio; Fukasawa, Atsushi; Sato, Takuro; Yoshida, Tatsumasa; and Ando, Hiromi, to Oki Electric Industry Co., Ltd. High frequency filter. 4,386,328, Cl. 333-202.000.

Matsumoto, Hiromi; Uehori, Yuji; Kajihara, Tetsuo; and Nakano, Tsuneo, to Nippon Steel Corporation; and Mitsubishi Jukogyo Kabushiki Kaisha. Tandem rolling mill train for metal plate and sheet. 4,385,512, Cl. 72-234.000.

Matsumoto, Jun: *See*—
Kuramochi, Hiroshi; Nakajo, Noriaki; Abekura, Makoto; and Matsumoto, Jun, 4,386,175, Cl. 524-32.000.

Matsumoto, Kenji: *See*—
Sato, Masamichi; and Matsumoto, Kenji, 4,386,143, Cl. 430-7.000.

Matsuoka, Hiroki: *See*—
Yoshida, Shuzo; Matsuoka, Hiroki; Nogami, Susumu; Ono, Hironobu; Sueishi, Motoharu; and Ueda, Kazuo, 4,385,613, Cl. 123-489.000.

Matsuoka, Michio: *See*—
Kazuo, Eda; Yasuharu, Kikuchi; Osamu, Makino; and Matsuoka, Michio, 4,386,021, Cl. 252-519.000.

Matsuoka, Shigeru; Tokunaga, Takeshi; Yonekura, Seiji; Yamauchi, Koji; and Suzuki, Mitsuo, to Hitachi, Ltd. Automatic door control apparatus. 4,386,398, Cl. 364-167.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Fujita, Yosuke; Fukushima, Fumio; Fukuda, Yoji; and Nitta, Tsuneharu, 4,386,295, Cl. 313-463.000.
Kazuo, Eda; Yasuharu, Kikuchi; Osamu, Makino; and Matsuoka, Michio, 4,386,021, Cl. 252-519.000.
Neki, Shigeo; Shinozaki, Nozomu; and Dohi, Takashi, 4,386,301, Cl. 318-318.000.
Shinohara, Koichi, 4,386,113, Cl. 427-42.000.
Yamamoto, Yoshio; Nagaoka, Yukio; and Yokoajiro, Yoshiyuki, 4,385,887, Cl. 431-90.000.
Yoshimura, Yoshikazu, 4,386,326, Cl. 331-96.000.

Mattock, Patrick: *See*—
Rosevear, Alan; and Mattock, Patrick, 4,385,991, Cl. 210-635.000.

Mattox, E. Michael; Mask, E. Dale; and Beeding, Jack D., to Newmark Industries, Inc. Isokinetic exerciser. 4,385,760, Cl. 272-131.000.

Matyas, Stephen M.: *See*—
Ehrsam, William F.; Elander, Robert C.; Matyas, Stephen M.; Meyer, Carl H. W.; Powers, Robert L.; Prentice, Paul N.; Smith, John L.; and Tuchman, Walter L., 4,386,234, Cl. 178-22.090.

Matzner, Markus: *See*—
Maresca, Louis M.; and Matzner, Markus, 4,386,186, Cl. 525-68.000.

Maurer, Alexander; Adrian, Renate; Wasel-Nielen, Horst-Dieter; Sorbe, Gunter; and Kandler, Joachim, to Hoechst Aktiengesellschaft. Granulate of alkali metal aluminum silicate and pentasodium tripolyphosphate, and process for making it. 4,386,024, Cl. 252-523.000.

Maurer, Fritz; Priesnitz, Uwe; Riebel, Hans-Jochem; Fuchs, Rainer; and Klauke, Erich, to Bayer Aktiengesellschaft. Intermediates for preparation of 3-bromo-4-fluoro-benzyl alcohol. 4,386,035, Cl. 260-463.000.

Mawer, Gary L, to Face Maker Industry. Clamping device. 4,385,755, Cl. 269-41.000.

Max Planck Gesellschaft zur Forderung der Wissenschaften E.V.: *See*—
Hartwig, Peter; Weppner, Werner; and Wichelhaus, Winfried, 4,386,020, Cl. 252-518.000.

Maxwell Products, Inc.: *See*—
Elliott, Franklin E.; and Estrada, Jaime Z., 4,385,410, Cl. 5-67.000.

Maxwell, Richard F., Jr., to Westinghouse Electric Corp. Laser beam boresight system. 4,385,834, Cl. 356-153.000.

McBride, Joan: *See*—
McBride, Thomas D., 4,386,055, Cl. 422-186.180.

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McCarthy, Timothy W., to Allied Corporation. Control of trihalomethanes in water treatment. 4,385,996, Cl. 210-719.000.

McCrary, Jack L. Sulfonated gilsonite drilling mud additive. 4,385,999, Cl. 252-8.50C.

McCready, Newton W.; and Groffman, Stephan S., to Amchem Products, Inc. Spray process for chemical nickel plating. 4,386,121, Cl. 427-235.000.

McDonald, Colin. Portable spool holder. 4,385,738, Cl. 242-129.600.

McFee, James H.: *See*—
Finegan, Sean N.; McFee, James H.; Swartz, Robert G.; and Voshchenkov, Alexander M., 4,385,946, Cl. 148-175.000.

McGhee, Charles: *See*—
Kalmowitz, Sheldon; Beigel, Regis; Sutphin, Eldon; and McGhee, Charles, 4,386,275, Cl. 250-342.000.

McGill, Charles K.; and Sutor, James J., to Reilly Tar & Chemical Corporation. Chichibabin reaction. 4,386,209, Cl. 546-311.000.

McGinley, Charles M.; Schamber, Arlen R.; Melin, Denny L.; Christensen, Ronald L.; Tazzia, Edward K.; Hackbarth, Richard W.; Fogarty, Terry M.; and Faint, Richard C., to Geo. A. Hormel & Company. Water treatment apparatus. 4,385,987, Cl. 210-150.000.

McGinniss, Vincent D., to RCA Corporation. ESR Analysis of conductive video disc components. 4,386,319, Cl. 324-300.000.

McGrath, John F.; and Candia, Albert F. Photo tree. 4,385,459, Cl. 40-124.400.

McGraw-Edison Company: *See*—
Moran, Richard J., 4,386,384, Cl. 361-94.000.

McGurty, James A. Austenitic iron alloys having yttrium. 4,385,934, Cl. 75-124.00F.

McIlwain, Irwin D., to Sperry Corporation. Transporting a crop harvesting header. 4,385,483, Cl. 56-228.000.

McInerney Spring & Wire Company: *See*—
Sassak, Frank, 4,385,514, Cl. 72-416.000.

McKane, Thomas D.: *See*—
Iverson, Jacob E., 4,385,640, Cl. 137-117.000.

McKay, Dwight L.: *See*—
Bertus, Brent J.; and McKay, Dwight L., 4,386,015, Cl. 252-455.00Z.

McKee Door Company: *See*—
Gabry, Frank F.; and Borge, Gene A., 4,385,471, Cl. 49-322.000.

McKinley, Alexander T. Intrusion alarm system. 4,386,342, Cl. 340-544.000.

McVaugh, Arthur K. Reel loader. 4,385,862, Cl. 414-555.000.

Mead Johnson & Company: *See*—
Temple, Davis L., Jr.; and Lobeck, Walter G., Jr., 4,386,091, Cl. 424-250.000.

Mead, Ralph T.; Rudolph, Frank W.; Frenz, Norbert W., Jr.; and Greatbatch, Wilson, to Wilson Greatbatch, Ltd. Method of making a lithium-iodine cell. 4,385,439, Cl. 29-623.200.

Mecapec S.A.: *See*—
Bieri, Hans; and Rimmele, Karl, 4,385,538, Cl. 83-169.000.

Mechanical Applications, Inc.: *See*—
Erskine, Paul, 4,385,719, Cl. 227-116.000.

Medical Research Associates, Ltd.: *See*—
Sterling, Robert E., 4,386,179, Cl. 524-269.000.

Medlin, William L.: *See*—
Masse, Lucien; Medlin, William L.; and Sexton, James H., 4,385,520, Cl. 73-579.000.

Medtronic, Inc.: *See*—
Knoll, Glenn F.; Strange, Donald R.; and Bennett, Matthew C., Jr., 4,386,404, Cl. 364-414.000.

Meier, Ernest; and Bachmann, Herbert, to Stopinc Aktiengesellschaft. Rotary sliding closure unit and liquid melt container employing the same. 4,385,715, Cl. 222-598.000.

Melin, Denny L.: *See*—
McGinley, Charles M.; Schamber, Arlen R.; Melin, Denny L.; Christensen, Ronald L.; Tazzia, Edward K.; Hackbarth, Richard

W.; Fogarty, Terry M.; and Faint, Richard C., 4,385,987, Cl. 210-150.000.

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Merck & Co., Inc.: *See*—
Christensen, Burton G.; and DiNinno, Frank P., 4,386,030, Cl. 260-245.20R.
O'Rourke, Edward C.; and Fullerton, W. Wardle, 4,386,066, Cl. 424-92.000.
Pogany, Stefano A.; and Higuchi, Takeru, 4,386,103, Cl. 424-313.000.
Ponpipom, Mitree M.; Bugianesi, Robert L.; Robbins, James C.; and Shen, Tsung-Ying, 4,386,026, Cl. 260-112.50R.
Woltersdorf, Otto, Jr.; Michelson, Stuart R.; Sondey, John M.; and Schwam, Harvey, 4,386,098, Cl. 424-270.000.

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Krause, Joachim; Romer, Michael; and Pohl, Ludwig, 4,386,007, Cl. 252-299.620.

Merger, Franz; Miesen, Ernest; Broecker, Franz J.; Schroeder, Wolfgang; Baer, Karl; Paetsch, Juergen; and Hupfer, Leopold, to BASF Aktiengesellschaft. Hydrogenation catalysts for the preparation of propanediols. 4,386,018, Cl. 252-465.000.

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Merritt, Carleton G.; Wingerd, Winston H.; and Keller, David J., to Borden, Inc. Process for preparing a time delayed release flavorant and an improved flavored chewing gum composition. 4,386,106, Cl. 426-5.000.

Merten, Rudolf: *See*—
Giesecke, Henning; Merten, Rudolf; and Rottmaier, Ludwig, 4,386,213, Cl. 548-264.000.

Merz, Johann, to Zahnradfabrik Friedrichshafen, AG. Radial piston pump. 4,385,870, Cl. 417-273.000.

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Mootz, Wolfgang, 4,385,741, Cl. 244-230.000.
Wackerle, Peter; and Franz, Dieter, 4,385,957, Cl. 156-273.900.

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Margolis, Jerry, 4,385,989, Cl. 210-169.000.

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Brewill, Arthur D., 4,385,722, Cl. 229-62.000.

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Welsch, John H.; and Carver, Robert J., 4,385,781, Cl. 294-161.000.

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Konig, Hans-Bodo; Metzger, Karl G.; and Preiss, Michael, 4,386,089, Cl. 424-246.000.

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Rasshofer, Werner; Dieterich, Dieter; and Meyborg, Holger, 4,386,218, Cl. 564-38.000.

Meyer, Carl H. W.: *See*—
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Brady, Joseph M.; Cordes, Franz R.; Gedrat, Klaus H.; Goffredo, Daniel L.; Meyer, Walter; and Shakley, Conrad D., 4,385,967, Cl. 204-27.000.

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Meyerhoefer, Carl E.; and Meyerhoefer, Carl H., 4,385,539, Cl. 83-473.000.

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Woltersdorf, Otto, Jr.; Michelson, Stuart R.; Sondey, John M.; and Schwam, Harvey, 4,386,098, Cl. 424-270.000.

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Westerberg, Gerhard, 4,385,835, Cl. 356-358.000.

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Merger, Franz; Miesen, Ernest; Broecker, Franz J.; Schroeder, Wolfgang; Baer, Karl; Paetsch, Juergen; and Hupfer, Leopold, 4,386,018, Cl. 252-465.000.
Merger, Franz; Miesen, Ernest; Broecker, Franz J.; Schroeder, Wolfgang; Baer, Karl; Paetsch, Juergen; and Hupfer, Leopold, 4,386,219, Cl. 568-853.000.

Mignot, Andre G. E., to Eastman Kodak Company. Silver bromide emulsions of narrow grain size distribution and processes for their preparation. 4,386,156, Cl. 430-567.000.

Miller, Alvin B., to Gearhart Industries, Inc. Method and apparatus for measuring tilt and relative bearing. 4,385,449, Cl. 33-304.000.

Miller, Richard L. Solar collector. 4,385,624, Cl. 126-416.000.

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Minnesota Mining and Manufacturing Company: *See*—
Behr, Fred E., 4,386,214, Cl. 549-11.000.
Campbell, Karen J.; and Evans, Jack L., 4,386,135, Cl. 428-447.000.
Dille, William A.; Erickson, Wayne E.; and Royer, Leon D., 4,386,132, Cl. 428-372.000.
Smith, George H.; and Olofson, Peter M., 4,386,154, Cl. 430-336.000.
Vanderwerf, Dennis F., 4,385,808, Cl. 350-452.000.

Minor, Ray C., to Sperry Corporation. Seat interlock for skid-steer loader. 4,385,863, Cl. 414-699.000.

Misiorny, Alfons: *See*—
Helgstrand, Ake J. E.; Johansson, Karl N.; Misiorny, Alfons; Noren, Jan O.; and Stening, Goran B., 4,386,081, Cl. 424-212.000.

Miskiewicz, Leonard A. Water closet valve. 4,385,406, Cl. 4-378.000.

Mista, Kresimir, to Karl Mayer Textilmaschinenfabrk GmbH. Weft thread laying apparatus with tension strip. 4,385,506, Cl. 66-84.00A.

Mitchell, Wallace F. Motorcycle sidecar. 4,385,770, Cl. 280-203.000.

Mitra, Gautam; and Lundblad, John L., to Cutter Laboratories, Inc. Antihemophilic factor concentrate and method for preparation. 4,386,068, Cl. 424-101.000.

Mitsubishi Denki Kabushiki Kaisha: *See*—
Futakuchi, Michio; and Kitakoga, Hidetoshi, 4,385,952, Cl. 156-174.000.
Hoshino, Yoshinobu, 4,385,845, Cl. 384-123.000.
Shimada, Wataru; Machida, Kazumichi; and Okada, Masaru, 4,385,720, Cl. 228-166.000.

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Nakamura, Tadasi; Osugi, Minoru; Obata, Yoriko; and Ebata, Shuji, 4,386,017, Cl. 252-463.000.

Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Matsumoto, Hiromi; Uehori, Yuji; Kajihara, Tetsuo; and Nakano, Tsuneo, 4,385,512, Cl. 72-234.000.

Mitsui, Kazuo: *See*—
Endoh, Seiji; Tada, Shotaro; Kuga, Toru; Takeda, Yasuo; Mitsui, Kazuo; and Yoshimura, Yoji, 4,385,795, Cl. 339-176.0MF.

Mitsui Sugar Co., Ltd.: *See*—
Shimizu, Junichi; Suzuki, Kazumasa; and Nakajima, Yoshikazu, 4,386,158, Cl. 435-97.000.

Mittleman, John, to United States of America, Navy. Pit depth gauge. 4,385,522, Cl. 73-632.000.

Miura, Ishi: *See*—
Sato, Atsushige; Miura, Ishi; Kumei, Yasuhiro; Okuno, Osamu; and Yoshida, Bunsaku, 4,385,892, Cl. 433-228.000.

Miura, Yoshisuke: *See*—
Komeyasu, Minoru; Miura, Yoshisuke; and Sakai, Hiroyoshi, 4,386,110, Cl. 426-244.000.

Miyabayashi, Toshio: *See*—
Kotani, Teizo; Enyo, Hiroji; Tanaka, Minoru; Takemura, Yasuhiko; and Miyabayashi, Toshio, 4,386,181, Cl. 524-304.000.

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Miyakawa Industry Co., Ltd.: *See*—
Miyakawa, Eiji, 4,385,854, Cl. 408-127.000.

Mobil Oil Corporation: *See*—
Arbit, Harold A., 4,386,138, Cl. 428-520.000.
Gross, Benjamin; and Ramage, Michael P., 4,385,985, Cl. 208-113.000.
Masse, Lucien; Medlin, William L.; and Sexton, James H., 4,385,520, Cl. 73-579.000.
Mullins, Lynn D.; and Fitch, John L., 4,385,662, Cl. 166-263.000.

Mockli, Peter, to Ciba-Geigy AG. Transfer printing supports and dyes for their manufacture: fluoroalkoxy anthraquinone dye. 4,385,900, Cl. 8-471.000.

Modcom, Inc.: *See*—
Klein, Paul E., 4,385,890, Cl. 433-4.000.

Moinet, Gerard H.; Dostert, Philippe L.; and Bourgery, Guy R., to Delalande S.A. Nitrogen containing 2,3-dihydro naphthalenes, compositions and use. 4,386,090, Cl. 424-248.400.

Moles, Frank D.: *See*—
Aston, Geoffrey W.; Moles, Frank D.; Smart, Roderick M.; and Tate, Andrew H. J., 4,385,917, Cl. 65-21.300.

Moliere, Francoise: *See*—
Ferrieu, Gilbert M. M.; Lefort, Emmanuel; and Moliere, Francoise, 4,386,236, Cl. 179-1.0VL.

Molino, Joseph L. Invalid support chair structure. 4,385,769, Cl. 280-47.380.

Monette, Gerald J., to Marathon Electric Manufacturing Corp. Centrifugal actuator for A.C. induction motor. 4,386,290, Cl. 310-68.00E.

Monnich, Erbo: *See*—
Scheuerpflug, Wolfgang; and Monnich, Erbo, 4,385,469, Cl. 49-41.000.

Monroe, Carl M., to Dow Corning Corporation. Curable fluorinated silicone elastomer. 4,386,170, Cl. 523-210.000.

Monsanto Company: *See*—
Deetman, Gerbrand, 4,386,224, Cl. 568-703.000.
Mount, Ramon A.; and Robinson, Warn D., 4,386,215, Cl. 549-259.000.
Nelson, George D., 4,386,202, Cl. 544-194.000.
Purdum, William R., 4,385,921, Cl. 71-86.000.
Serlin, Irving; and Gardner, Donald M., 4,386,184, Cl. 524-425.000.

Montgomery, John A.: *See*—
Chiang, Peter K.; Cantoni, Giulio L.; and Montgomery, John A., 4,386,093, Cl. 424-256.000.

Moore, Bernard S., to Pfizer Inc. Resolution of racemic 5-phenyl-2-pentanol. 4,386,205, Cl. 546-35.000.

Mootz, Wolfgang, to Messerschmitt-Boelkow-Blohm GmbH. Aircraft steering mechanism. 4,385,741, Cl. 244-230.000.

Morabito, Joseph M.: *See*—
Keller, Harry N.; Morabito, Joseph M.; and Pitetti, Raymond C., 4,385,966, Cl. 204-15.000.

Moran, Richard J., to McGraw-Edison Company. Fault responsive protective device. 4,386,384, Cl. 361-94.000.

Morcus, Alphonsus: *See*—
Bijwaard, Henricus M. J.; and Morcus, Alphonsus, 4,385,984, Cl. 208-19.000.
Morgenthaler, Mark P.: *See*—
Henry, Tim W.; and Morgenthaler, Mark P., 4,386,339, Cl. 340-347.0AD.
Mori, Nobuyoshi: *See*—
Kurihara, Tomomichi; and Mori, Nobuyoshi, 4,385,710, Cl. 220-89.00A.
Mori, Sumio, to Fuji Photo Film Co. Ltd. Adaptive type quantizer. 4,386,366, Cl. 358-135.000.
Moriguchi, Fujio: *See*—
Murayama, Tomio; Moriguchi, Haruhiko; Moriguchi, Fujio; and Ohmori, Takashi, 4,386,360, Cl. 346-76.0PH.
Moriguchi, Haruhiko: *See*—
Murayama, Tomio; Moriguchi, Haruhiko; Moriguchi, Fujio; and Ohmori, Takashi, 4,386,360, Cl. 346-76.0PH.
Morishita, Yukitoshi: *See*—
Okazaki, Takuya; Asada, Toyohiko; Nishihata, Masahide; Morishita, Yukitoshi; and Oda, Keijiro, 4,385,653, Cl. 152-209.00R.
Moriwaki, Minoru: *See*—
Oe, Takanori; Moriwaki, Minoru; Goto, Kazuhiro; and Hisadome, Masao, 4,386,092, Cl. 424-256.000.
Moriyama, Noboru; and Inoue, Takeshi, to Kao Soap Co., Ltd. Agent for promoting filtration dehydration of metal hydroxide slurry. 4,385,903, Cl. 23-313.00R.
Morozov, Gennady Y.: *See*—
Daiker, Artur L.; Veis, Anatoly I.; Bogatyrev, Anatoly D.; Kochengin, Evgeny Y.; Palko, Viktor N.; Novoselov, Nikolai M.; Volchematiev, Jury V.; and Morozov, Gennady Y., 4,385,941, Cl. 148-9.500.
Morris, Charles F.: *See*—
Strange, Robert E.; and Morris, Charles F., 4,385,853, Cl. 408-68.000.
Morris, John S., Jr. Driving apparatus. 4,385,428, Cl. 29-402.010.
Morrison, Eric F., to Ampex Corporation. Chroma key switching signal generator. 4,386,363, Cl. 358-22.000.
Mortensen, Bruce. Apparatus for on-site detection of mastitis in milk animals. 4,385,590, Cl. 119-14.010.
Moscovich, Ivan. Pattern forming ball game. 4,385,763, Cl. 273-86.00R.
Mosehauer, Michael: *See*—
Kasper, George P.; Kroll, Arthur S.; and Mosehauer, Michael, 4,385,823, Cl. 355-3.00R.
Moser, Herbert S., to Owens-Illinois, Inc. Barium-free Type I, Class B laboratory soda-alumina-borosilicate glass. 4,386,164, Cl. 501-66.000.
Mossler, Allen A. Bumper end cap assembly for pneumatic tube system carriers. 4,385,852, Cl. 406-190.000.
Mostek Corporation: *See*—
Giltner, Michael E.; Mueller, Jack C.; and Fiest, Robert R., 4,386,416, Cl. 364-900.000.
Proebsting, Robert J., 4,386,389, Cl. 361-406.000.
Terry, Michael B., 4,386,281, Cl. 307-200.00B.
Moti, Samuel: *See*—
Forshee, David J., 4,386,277, Cl. 250-516.100.
Motobayashi, Hiroshi, to Terumo Corporation. Test piece for detection of occult blood. 4,386,053, Cl. 422-56.000.
Motoren und Turbinen Union Munchen GmbH: *See*—
Zacherl, Anton, 4,385,864, Cl. 415-136.000.
Motorola Inc.: *See*—
Bafaro, Michael P., 4,386,311, Cl. 323-271.000.
Petrie, Adelore F.; and Javeri, Rupin J., 4,385,605, Cl. 123-414.000.
Sievers, Kirk A., 4,386,310, Cl. 322-28.000.
Mount, Ramon A.; and Robinson, Warn D., to Monsanto Company. Maleic anhydride production with high crush strength catalysts. 4,386,215, Cl. 549-259.000.
Mourgues, Gerard: *See*—
Dubois, Jean-Claude; and Mourgues, Gerard, 4,385,797, Cl. 350-96.200.
MPD Technology Corporation: *See*—
Golben, Peter M., 4,385,494, Cl. 60-528.000.
MTU Motoren-und Turbinen-Union Munchen GmbH: *See*—
Reisenweber, Karl-Ullrich; and Grafenegger, Franz, 4,385,787, Cl. 384-114.000.
Mualler, Walter; Studer, Urs P.; and Blobel, Harald, to Muller, Walter. Operating apparatus used at an electronic instrument provided with at least one synthesizer. 4,385,541, Cl. 84-1.140.
Mueller, Jack C.: *See*—
Giltner, Michael E.; Mueller, Jack C.; and Fiest, Robert R., 4,386,416, Cl. 364-900.000.
Mueller, Martin: *See*—
Arndt, Carl; and Mueller, Martin, 4,386,044, Cl. 264-230.000.
Mukae, Kazuo: *See*—
Nagasawa, Ikuo; Mukae, Kazuo; Tsuda, Koichi; Ishii, Takashi; and Sakaguchi, Toyoshige, 4,386,022, Cl. 252-521.000.
Mulcahy, Timothy E. Descent control device. 4,385,679, Cl. 182-5.000.
Muller, Hans, to Grapha-Holding AG. Apparatus for converting a stream of sheets into discrete stacks. 4,385,757, Cl. 271-189.000.
Muller, Hermann: *See*—
Syta, Jurgen; and Muller, Hermann, 4,385,815, Cl. 353-104.000.
Muller, Jurgen: *See*—
Van Landeghem, Willy K.; De Maayer, Petrus J.; Loots, Francois P.; Pattyn, Hendrik A.; Bauer, Walter; Farber, Heinrich; Muller, Jurgen; and Schmidt, Manfred, 4,386,431, Cl. 378-187.000.
Muller, Walter: *See*—
Mualler, Walter; Studer, Urs P.; and Blobel, Harald, 4,385,541, Cl. 84-1.140.
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Johse, Hans; Jentzsch, Arndt; Muller, Wolfgang; Forster, Karl-Heinz; and Schuck, Helmut, 4,385,560, Cl. 101-365.000.
Muller, Wolfgang H. E.; and Kaufhold, Manfred, to Chemische Werke Huls A.G. Process for the recovery of pure methylal from methanol-methylal mixtures. 4,385,965, Cl. 203-75.000.
Mullins, Lynn D.; and Fitch, John L., to Mobil Oil Corporation. Method of cyclic solvent flooding to recover viscous oils. 4,385,662, Cl. 166-263.000.
Mumby, Edward S.; and Jeter, John D., to Exploration Logging, Inc. Servo valve for well-logging telemetry. 4,386,422, Cl. 367-85.000.
Munn, J. Knox; Roberts, Thomas; and Stocker, Curtis L., to Circle Games. Conquest game. 4,385,765, Cl. 273-253.000.
Murakami, Fumikazu; and Funayama, Shizuo, to Kabushiki Kaisha Daini Seikosha. Electromagnetic transducer. 4,386,244, Cl. 179-179.000.
Murakami, Keikichi, to Kawasaki Jukogyo K.K. Rotary steel converter. 4,385,748, Cl. 266-44.000.
Murayama, Tomio; Moriguchi, Haruhiko; Moriguchi, Fujio; and Ohmori, Takashi, to Fuji Xerox Co., Ltd. Heat-sensitive recording head. 4,386,360, Cl. 346-76.0PH.
Murphy, Patrick J., II. Fry basket shaker device. 4,385,703, Cl. 209-674.000.
Murphy, Richard J., to Avon Rubber Company Limited. Method and device for detecting leaks from pipelines. 4,386,269, Cl. 250-227.000.
Murray, David, to Kerr Controls Limited. Solid fuel furnace. 4,385,568, Cl. 110-234.000.
Murtha, Marlyn J.: *See*—
Dobbins, Michael S.; and Murtha, Marlyn J., 4,386,057, Cl. 423-138.000.
Myers, Paul R.: *See*—
Hodges, Joseph L.; Wassmer, Norman B.; and Myers, Paul R., 4,385,700, Cl. 209-539.000.
Naarmann, Herbert; Penzien, Klaus; Brandstetter, Franz; Lindenschmidt, Gerhard; and Seiler, Erhard, to BASF Aktiengesellschaft. Halogen-containing s-triazines. 4,386,203, Cl. 544-219.000.
Nabben, Marvin. Exhaust fan and anti-backdraft shutter assembly. 4,385,552, Cl. 98-116.000.
NADELLA: *See*—
Mallet, Bernard, 4,385,897, Cl. 464-89.000.
Nagai, Yasuhiro; Kashimura, Toshisada; Kaita, Kunio; and Kawaberi, Tetsuro, to Kabushiki Kaisha Kobe Seiko Sho. Arc welding process using a consumable stranded wire electrode. 4,386,259, Cl. 219-137.00R.
Nagaoka, Yukio: *See*—
Yamamoto, Yoshio; Nagaoka, Yukio; and Yokoajiro, Yoshiyuki, 4,385,887, Cl. 431-90.000.
Nagasawa, Ikuo; Mukae, Kazuo; Tsuda, Koichi; Ishii, Takashi; and Sakaguchi, Toyoshige, to Fuji Electric Co. Ltd. Voltage non-linear resistance ceramics. 4,386,022, Cl. 252-521.000.
Nagayoshi, Tatsuo: *See*—
Aoki, Shigeo; Isogami, Shuzo; Tamamura, Junichi; Nagayoshi, Tatsuo; Yasui, Masaru; and Hirao, Susumu, 4,385,473, Cl. 51-281.00R.
Nair, Krishna K.; and Snyder, Keith A., to International Business Machines Corporation. Process for making multilayer integrated circuit substrate. 4,386,116, Cl. 427-99.000.
Naito, Michinori, to Trio Kabushiki Kaisha. FM Stereo demodulator circuit. 4,386,235, Cl. 179-1.0GE.
Nakada, Minoru: *See*—
Sato, Fumihiro; Iwasaki, Masayuki; Terada, Takashi; Ninomiya, Hiroshi; and Nakada, Minoru, 4,386,120, Cl. 427-213.000.
Umezu, Kenji; Watanabe, Masakichi; Nakada, Minoru; and Hitosugi, Toshiaki, 4,385,505, Cl. 62-285.000.
Nakahata, Kimio; Tanigawa, Koichi; Adachi, Hiroyuki; and Watanabe, Tsuyoshi, to Canon Kabushiki Kaisha. Image developing method and device therefor. 4,385,829, Cl. 355-3.0DD.
Nakajima, Kenji: *See*—
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Kuwana, Noriaki; Abe, Shinya; and Yamada, Kouzi, 4,386,227, Cl. 568-875.000.
Nakajima, Tsuyoshi: *See*—
Watanabe, Nobuatsu; Nakajima, Tsuyoshi; Yamada, Hiroaki; and Ohsawa, Noboru, 4,386,137, Cl. 428-457.000.
Nakajima, Yasuo; Onoda, Michio; and Sugihara, Kunihiko, to Nissan Motor Company, Limited. Engine system. 4,385,598, Cl. 123-76.000.
Nakajima, Yoshikazu: *See*—
Shimizu, Junichi; Suzuki, Kazumasa; and Nakajima, Yoshikazu, 4,386,158, Cl. 435-97.000.
Nakajo, Noriaki: *See*—
Kuramochi, Hiroshi; Nakajo, Noriaki; Abekura, Makoto; and Matsumoto, Jun, 4,386,175, Cl. 524-32.000.
Nakamura, Kenichi, to Yoshida Kogyo K. K. Combination of hollow member and backing member. 4,385,475, Cl. 52-709.000.
Nakamura, Kiyoshi: *See*—
Ochiai, Toshihiko; Nakamura, Kiyoshi; Nishida, Katsutoshi; and Sakai, Masato, 4,385,866, Cl. 416-241.00B.
Nakamura, Tadao: *See*—
Nimura, Koichi; and Nakamura, Tadao, 4,386,245, Cl. 200-5.00R.
Nakamura, Tadasi; Osugi, Minoru; Obata, Yoriko; and Ebata, Shuji, to Mitsubishi Gas Chemical Company. Preparation of improved catalyst composition. 4,386,017, Cl. 252-463.000.
Nakamura, Yashushi; Ohtombe, Ko; and Izawa, Kouji, to Tokyo Shibaura Denki Kabushiki Kaisha. Currency note identification system. 4,386,432, Cl. 382-7.000.

Nakano, Tsuneo: *See*—
Matsumoto, Hiromi; Uehori, Yuji; Kajihara, Tetsuo; and Nakano, Tsuneo, 4,385,512, Cl. 72-234.000.
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Shinozaki, Fumiaki; Washizawa, Yasuo; Ikeda, Tomoaki; Nakao, Sho; and Kondoh, Syunichi, 4,386,153, Cl. 430-285.000.
Nakata, Hiroshi; and Iwata, Masao, to Oppama Kogyo Kabushiki Kaisha. Over-rotation preventing device for internal combustion engines. 4,385,617, Cl. 123-602.000.
Nakatsugawa, Hiroshi, to Furukawa Circuit Foil Co., Ltd. Copper foil for a printed circuit and a method for the production thereof. 4,386,139, Cl. 428-607.000.
Nakayasu, Haruo: *See*—
Takahashi, Hideo; Igi, Keishiro; Ogawara, Hisashi; and Nakayasu, Haruo, 4,385,656, Cl. 164-525.000.
Nakazawa, Kiwao; and Tanimoto, Akikazu, to Nippon Kogaku K. K. Alignment device. 4,385,838, Cl. 356-399.000.
Nalos, Ervin J.: *See*—
Drew, Prentis B.; and Nalos, Ervin J., 4,386,355, Cl. 343-112.00D.
Naramore, Raymond A., to Xerox Corporation. High speed duplicator with finishing function. 4,385,827, Cl. 355-14.0SH.
Narayan, Thirumurti: *See*—
Patton, John T., Jr.; and Narayan, Thirumurti, 4,386,167, Cl. 521-161.000.
Narveson, Parm L.; Clark, Robert W.; and Hannert, Lawrence C., to Sperry Corporation. Color and brightness tracking in a cathode ray tube display system. 4,386,345, Cl. 340-703.000.
Nascimento, Dennis F.: *See*—
Lenker, Don H.; and Nascimento, Dennis F., 4,385,702, Cl. 209-629.000.
Nash Engineering Company: *See*—
King, Stephen J., 4,385,868, Cl. 417-69.000.
National Research Development Corporation: *See*—
Risk, Robert J.; and Shanks, Ian A., 4,386,411, Cl. 364-521.000.
National Research Institute for Metals: *See*—
Tachikawa, Kyoji; Asano, Toshihisa; and Takeuchi, Takao, 4,385,942, Cl. 148-11.50Q.
Nava, Pier L. Rearview device incorporable in helmets. 4,385,811, Cl. 350-569.000.
Nazzaro-Porro, Marcella. Process for the treatment of acne. 4,386,104, Cl. 424-317.000.
Neathery, David O.; and Riggs, Edward J., to King Instrument Corporation. Digitally controllable analog switch. 4,386,285, Cl. 307-311.000.
Neff, Marion W., to Recognition Equipment Inc. Character doubling eliminator. 4,386,433, Cl. 382-48.000.
Negishi, Akira: *See*—
Kawai, Toshikazu; Maruyama, Yutaka; Negishi, Junji; and Negishi, Akira, 4,386,223, Cl. 568-411.000.
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Kawai, Toshikazu; Maruyama, Yutaka; Negishi, Junji; and Negishi, Akira, 4,386,223, Cl. 568-411.000.
Neki, Shigeo; Shinozaki, Nozomu; and Dohi, Takashi, to Matsushita Electric Industrial Co., Ltd. Digital speed control system for sewing machines. 4,386,301, Cl. 318-318.000.
Nelson, Gayle V. Head stabilizer accessory. 4,385,627, Cl. 128-76.00R.
Nelson, George D., to Monsanto Company. Chloroammelides and their preparation. 4,386,202, Cl. 544-194.000.
Nelson Industries, Inc.: *See*—
Jaisinghani, Rajan A.; and Sprenger, Gregory S., 4,385,986, Cl. 210-123.000.
Nelson, Peter D., to English Electric Valve Company Limited. Target for a pyroelectric camera. 4,386,294, Cl. 313-388.000.
Nelson, William T.: *See*—
Heckelsberg, Louis F.; Nelson, William T.; Schiff, Sidney; and Zuech, Ernest A., 4,386,229, Cl. 585-255.000.
Neskora, Daniel R.; and Schlosberg, Richard H., to Exxon Research and Engineering Co. Liquefaction of carbonous materials with vapor phase hydrogen donor solvents. 4,385,981, Cl. 208-8.00R.
Neufeldt, Emerson W. Attachment for removing glued-on carpet padding. 4,385,412, Cl. 15-236.00C.
Neuser, Johannes, to Hundt & Weber Schaltgerate GmbH. Switch. 4,386,253, Cl. 200-302.000.
Neuwirth, Helmut: *See*—
De Luca, Paul V.; Neuwirth, Helmut; and Oddsen, Robert, 4,386,243, Cl. 179-175.10R.
Neuzil, Richard W., to UOP Inc. Process for the separation of cresol from xylenol. 4,386,225, Cl. 568-758.000.
Neuzil, Richard W.: *See*—
Kulprathipanja, Santi; and Neuzil, Richard W., 4,386,012, Cl. 252-430.000.
Newmark Industries, Inc.: *See*—
Mattox, E. Michael; Mask, E. Dale; and Beeding, Jack D., 4,385,760, Cl. 272-131.000.
Nibley, David A.: *See*—
United States of America, National Aeronautics and Space Administration; Nishioka, Kenji; Nibley, David A.; Jeffers, Eldon L.; and Brooks, Richard L., 4,386,157, Cl. 435-39.000.
Nichols, Carl R. Adjustable socket. 4,385,534, Cl. 81-114.000.
Nichols, Kenneth L.: *See*—
Dancy, William B.; and Nichols, Kenneth L., 4,385,920, Cl. 71-36.000.
Nickel, Bernd: *See*—
Lewin, Arthur; and Nickel, Bernd, 4,386,405, Cl. 364-415.000.
Nicoloso, Dante, to Societe Anonyme dite: Alsthom-Atlantique. Device for separably assembling two enclosures of a cut-out apparatus containing fluid under pressure. 4,386,250, Cl. 200-148.00R.
Nielsen, Helmar: *See*—
Sherman, Charles F.; Cole, Mark T.; and Nielsen, Helmar, 4,385,744, Cl. 248-551.000.
Nielsen Moulding Design Corporation: *See*—
Sherman, Charles F.; Cole, Mark T.; and Nielsen, Helmar, 4,385,744, Cl. 248-551.000.
Nikaido, Akira: *See*—
Karasawa, Setsuyuki; Aso, Mitsuaki; Goto, Yoshinori; and Nikaido, Akira, 4,386,287, Cl. 310-49.00R.
Nikko Industry Co., Ltd.: *See*—
Yasukawa, Shouzo, 4,385,889, Cl. 432-179.000.
Nimura, Koichi; and Nakamura, Tadao, to Honiden Electronics Co., Ltd. Normally-closed switching means with over-stroke compensation. 4,386,245, Cl. 200-5.00R.
Ninomiya, Hiroshi: *See*—
Sato, Fumihiro; Iwasaki, Masayuki; Terada, Takashi; Ninomiya, Hiroshi; and Nakada, Minoru, 4,386,120, Cl. 427-213.000.
Nippon Electric Co., Ltd.: *See*—
Inagaki, Yasaburo, 4,386,421, Cl. 365-230.000.
Ogawa, Fumihiro, 4,386,350, Cl. 340-765.000.
Yamamoto, Toru, 4,386,419, Cl. 365-203.000.
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Nakazawa, Kiwao; and Tanimoto, Akikazu, 4,385,838, Cl. 356-399.000.
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Akashi, Kazuo; Yoshida, Toyonobu; and Ishizuka, Ryuichi, 4,386,258, Cl. 219-121.0PM.
Nippon Soken, Inc.: *See*—
Akita, Sigeyuki, 4,386,386, Cl. 361-283.000.
Hattori, Tadashi; Goto, Kenji; Sawada, Daisaku; Shigematu, Takashi; Yamaguchi, Hiroaki; and Nishida, Minoru, 4,385,606, Cl. 123-416.000.
Shimogawa, Toshiaki; Kuwakado, Satosi; Tsuge, Noboru; and Takei, Toshihiro, 4,385,775, Cl. 280-806.000.
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Matsumoto, Hiromi; Uehori, Yuji; Kajihara, Tetsuo; and Nakano, Tsuneo, 4,385,512, Cl. 72-234.000.
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Kato, Masaaki, 4,385,609, Cl. 123-446.000.
Yoshida, Shuzo; Matsuoka, Hiroki; Nogami, Susumu; Ono, Hironobu; Sueishi, Motoharu; and Ueda, Kazuo, 4,385,613, Cl. 123-489.000.
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Ejiri, Takeshi; Tanaka, Seiichi; Kasai, Teruaki; Komatsuzaki, Masao; and Masuda, Satoru, 4,385,529, Cl. 74-535.000.
Hosaka, Akio, 4,385,596, Cl. 123-488.000.
Hosaka, Akio, 4,386,427, Cl. 371-11.000.
Kimura, Toshimitsu; and Shimizu, Tetsuo, 4,385,779, Cl. 293-102.000.
Kubota, Hitoshi, 4,385,495, Cl. 60-535.000.
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Masaki, Kenji; and Kanegae, Hidetoshi, 4,385,612, Cl. 123-489.000.
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Ohgami, Masaaki; Yasuda, Hiroki; and Suzuki, Hitoshi, 4,385,608, Cl. 123-440.000.
Sugasawa, Fukashi; Iizuka, Haruhiko; Etoh, Yukihiro; and Tanaka, Toshiaki, 4,385,600, Cl. 123-198.00F.

Tamura, Takeo; and Yamabe, Taiji, 4,385,804, Cl. 350-310.000.
Yamane, Ken, 4,385,496, Cl. 60-599.000.
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Reichert, William W.; Cody, Charles A.; and Youngken, Carle H., 4,386,059, Cl. 423-307.000.
Nobuatsu Watanabe: *See*—
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Noe, Renato R. Plug for high-pressure testing of tubes. 4,385,643, Cl. 138-90.000.
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Nonomura, Heisaku; Shimizu, Keiichiro; Kishi, Kohei; and Uede, Hisashi, to Sharp Kabushiki Kaisha. Matrix type liquid crystal display. 4,386,352, Cl. 340-784.000.
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Nordin, Ivan C.: *See*—
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Shaw, Timothy; and Burge, Charles T., 4,385,543, Cl. 84-298.000.
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Norris, Dallas G., to Western Electric Company, Inc. Strip advancing mechanism. 4,385,718, Cl. 226-68.000.
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Beun, Roger A., 4,386,388, Cl. 361-399.000.
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Branner-Jorgensen, Sven, 4,386,160, Cl. 435-221.000.
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O'Brien, Steven M., to Sperry Corporation. High speed processing restarting apparatus. 4,386,401, Cl. 364-200.000.
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Kvapil, Rudolph, 4,385,784, Cl. 299-2.000.
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Odelhog, Sven O., to Landstingens Inkopscentral. Germicidal absorbent body. 4,385,632, Cl. 604-360.000.
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Creed, Gerald J.; and Odermann, Charles R., 4,385,574, Cl. 112-184.000.
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Holz, George E.; and Ogle, James A., 4,386,348, Cl. 340-714.000.
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Horrocks, Lloyd A.; Dorman, Robert V.; and Dabrowiecki, Zbigniew M., 4,386,078, Cl. 424-180.000.
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Perrone, Terrence J.; Bolton, Theodore S.; and Carosna, Cosimo, to Carrier Corporation. Adjustable wire seal. 4,385,504, Cl. 62-259.100.

Perry, Vinson R.: *See*—
Smith, Grant M.; Perry, Vinson R.; and Busby, Bruce E., 4,386,379, Cl. 360-72.300.

Persson, Erling; and Axelsson, Lars B., to Knorr-Bremse GmbH. Brake unit having a slack adjuster. 4,385,548, Cl. 92-33.000.

Persson, John A., to Reynolds Metals Co.; and Reynolds Metals Co. Method of producing aluminum. 4,385,930, Cl. 75-10.00R.

Peschka, Walter, to Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V. Storage of liquid hydrogen. 4,386,309, Cl. 322-2.00R.

Peter, Joseph E.: *See*—
Inglis, Leslie R.; and Peter, Joseph E., 4,385,728, Cl. 239-424.000.

Peterknecht, Klaus: *See*—
Ulmer, Wolfgang; and Peterknecht, Klaus, 4,386,435, Cl. 455-139.000.

Petersen, Carl M., III, to Irvin Industries Inc. Safety belt buckle. 4,385,424, Cl. 24-230.00A.

Petersen, Carl M., III: *See*—
Gulette, Ronald S.; Gavagan, James A.; Petersen, Carl M., III; and Squires, Steven L., 4,385,737, Cl. 242-107.700.

Petersen, Chris C. Hog feeder. 4,385,591, Cl. 119-53.500.

Peterson, Christine J.: *See*—
Gibson, Gary E.; and Peterson, Christine J., 4,386,095, Cl. 424-263.000.

Peterson, Gregory P.; and Hamilton, Alan D., to Standard Oil Company (Indiana). Foam prepared from an unsaturated polyester resin copolymerization monomer, low molecular weight polyol, and isocyanate. 4,386,166, Cl. 521-99.000.

Peterson, James R.; and Doornink, Douglas J., to Tektronix, Inc. System and method for converting a non-interlaced video signal into an interlaced video signal. 4,386,367, Cl. 358-140.000.

Petrie, Adelore F.; and Javeri, Rupin J., to Motorola Inc. Electronic ignition input logic. 4,385,605, Cl. 123-414.000.

Petroff, Alan M. Sewage flow monitoring system. 4,386,409, Cl. 364-510.000.

Pfeiffer, Francis R., to SmithKline Beckman Corporation. Renally active tetrapeptides. 4,386,075, Cl. 424-177.000.

Pfizer Inc.: *See*—
Moore, Bernard S., 4,386,205, Cl. 546-35.000.

Pham, Quang M., to Societe Anonyme dite: Alsthom-Atlantique. Electronic control circuit for a separately excited DC machine. 4,386,299, Cl. 318-261.000.

Philibert, Daniel: *See*—
Teutsch, Jean G.; Costerousse, Germain; Philibert, Daniel; and Deraedt, Roger, 4,386,085, Cl. 424-238.000.

Philipp, Gerd; Ramsaier, Manfred; and Schach, Albert, to International Standard Electric Corporation. Push-button unit for telephone sets. 4,386,240, Cl. 179-90.00K.

Phillips, James W.; and Dirks, Gregory, to Dwyer Instruments, Inc. Strain gauge pressure transducer. 4,385,525, Cl. 73-720.000.

Phillips Petroleum Company: *See*—
Bailey, Fay W., 4,386,190, Cl. 525-93.000.
Bertus, Brent J.; and McKay, Dwight L., 4,386,015, Cl. 252-455.00Z.
Fodor, Lawrence M., 4,386,011, Cl. 252-429.00B.
Heckelsberg, Louis F.; Nelson, William T.; Schiff, Sidney; and Zuech, Ernest A., 4,386,229, Cl. 585-255.000.
Macdonell, Gary D.; and Stacy, Carl J., 4,386,185, Cl. 524-566.000.
Schirmer, Robert M.; and Fromm, Ellsworth H., 4,385,490, Cl. 60-39.230.

Piduch, Hans-Gunter: *See*—
Kwasnik, Hans-Jurgen; and Piduch, Hans-Gunter, 4,385,963, Cl. 202-263.000.

Pierce, Danny A.; Heisler, Joseph A.; and Self, Roger D., to Varian Associates, Inc. Target assemblies of special materials for use in sputter coating apparatus. 4,385,979, Cl. 204-298.000.

Piere Roch S.a.r.l.: *See*—
Roch, Charles; and Golay, Louis C., 4,385,446, Cl. 33-178.00R.

Pike, Louis D., to Pike Machine Products Company. Adjustable frictional drag lamp swivel. 4,386,393, Cl. 362-427.000.

Pike Machine Products Company: *See*—
Pike, Louis D., 4,386,393, Cl. 362-427.000.

Pilati, Luciano: *See*—
Belforte, Piero; Bostica, Bruno; and Pilati, Luciano, 4,386,425, Cl. 370-66.000.

Pioneer Electronic Corporation: *See*—
Saito, Tatsuo, 4,386,332, Cl. 335-231.000.
Toshimitu, Manabu, 4,386,298, Cl. 318-254.000.
Ueki, Yoshiharu, 4,386,380, Cl. 360-74.100.

Pischlinger, Franz, to Klockner-Humboldt-Deutz AG. Heat pump assembly. 4,385,725, Cl. 237-12.100.

Pitetti, Raymond C.: *See*—
Keller, Harry N.; Morabito, Joseph M.; and Pitetti, Raymond C., 4,385,966, Cl. 204-15.000.

Pitney Bowes Inc.: *See*—
Check, Frank T., Jr.; and Sansone, Ronald P., 4,386,272, Cl. 250-236.000.

Pitti, Vincent J., to Flink Company. Resilient deflector for snowplows. 4,385,458, Cl. 37-281.000.

Pitzele, Barnett S.: *See*—
Henderson, Richard E. L.; and Pitzele, Barnett S., 4,386,211, Cl. 548-196.000.

Plastonics International Inc.: *See*—
Kaempen, Charles E., 4,385,644, Cl. 138-109.000.

Plessey Overseas Limited: *See*—
Watson, Andrew W. D., 4,386,354, Cl. 343-18.00A.

Podder, Nitya G., to Ciba-Geigy Corporation. Readily dispersible dye preparations. 4,385,901, Cl. 8-527.000.

Podrapsky, Jiri: *See*—
Orova, Josef; and Podrapsky, Jiri, 4,385,601, Cl. 123-335.000.

Pogany, Stefano A.; and Higuchi, Takeru, to Merck & Co., Inc. Dichloroamino acid derivatives useful as potent germicidal and fungicidal agents. 4,386,103, Cl. 424-313.000.

Pohl, Klaus: *See*—
Raasch, Hans; Lenzen, Jakob; and Pohl, Klaus, 4,385,488, Cl. 57-417.000.

Pohl, Ludwig: *See*—
Krause, Joachim; Romer, Michael; and Pohl, Ludwig, 4,386,007, Cl. 252-299.620.

Polaroid Corporation: *See*—
Berger, Michael; Byers, Charles H.; and Magenheimer, John J., 4,386,151, Cl. 430-228.000.
Herchen, Stephen R.; and Widiger, Gary N., 4,386,150, Cl. 430-222.000.
Locatell, Louis, Jr.; Rogers, Howard G.; Bilofsky, Ruth C.; Ciecciuch, Ronald F.; and Zepp, Charles M., 4,386,216, Cl. 549-394.000.

Ponpipom, Mitree M.; Bugianesi, Robert L.; Robbins, James C.; and Shen, Tsung-Ying, to Merck & Co., Inc. Cell-specific glycopeptide ligands. 4,386,026, Cl. 260-112.50R.

Popeil, Ronald M.; and Backus, Alan L., to Ronco Teleproducts, Inc. Air filtering device. 4,385,911, Cl. 55-316.000.

Porta Systems Corp.: *See*—
De Luca, Paul V.; Neuwirth, Helmut; and Oddsen, Robert, 4,386,243, Cl. 179-175.10R.

Possati, Mario; Golinelli, Guido; and Selleri, Narciso, to Finike Italiana Marposs, S.p.A. Plug comparator for checking the diameter of holes. 4,385,444, Cl. 33-143.00L.

Powers, Robert L.: *See*—
Ehrsam, William F.; Elander, Robert C.; Matyas, Stephen M.; Meyer, Carl H. W.; Powers, Robert L.; Prentice, Paul N.; Smith, John L.; and Tuchman, Walter L., 4,386,234, Cl. 178-22.090.

PPG Industries Canada, Ltd.: *See*—
Haugrud, Brett G., 4,385,902, Cl. 23-293.00R.

PPG Industries, Inc.: *See*—
Pressau, Jean P., 4,385,951, Cl. 156-105.000.

Precision Fukuhara Works, Ltd.: *See*—
Sawazaki, Masatoshi, 4,385,507, Cl. 66-140.00R.

Preiss, Michael: *See*—
Konig, Hans-Bodo; Metzger, Karl G.; and Preiss, Michael, 4,386,089, Cl. 424-246.000.

Prentice, Leland T. Method for transferring an image from a translucent material to a photosensitized material. 4,385,828, Cl. 355-132.000.

Prentice, Paul N.: *See*—
Ehrsam, William F.; Elander, Robert C.; Matyas, Stephen M.; Meyer, Carl H. W.; Powers, Robert L.; Prentice, Paul N.; Smith, John L.; and Tuchman, Walter L., 4,386,234, Cl. 178-22.090.

Presley, Glen T. Load sensing power steering system. 4,385,674, Cl. 180-132.000.

Pressau, Jean P., to PPG Industries, Inc. Low pressure lamination of safety glass. 4,385,951, Cl. 156-105.000.

Pretty Products, Inc.: *See*—
Bell, Ted A., 4,385,858, Cl. 411-112.000.

Priesnitz, Uwe: *See*—
Maurer, Fritz; Priesnitz, Uwe; Riebel, Hans-Jochem; Fuchs, Rainer; and Klauke, Erich, 4,386,035, Cl. 260-463.000.

Probst, Manfred: *See*—
Hilboll, Gerd; Lautenschlager, Hans-Heiner; Stoll, Brigitte; and Probst, Manfred, 4,386,031, Cl. 260-404.000.

Procter & Gamble Company, The: *See*—
Turner, John C.; Dovey, Anthony; and MacGilp, Neil A., 4,386,000, Cl. 252-8.800.

Produits Chimiques Ugine Kuhlmann: *See*—
Leclercq, Philippe; and Luternauer, Jacques, 4,386,060, Cl. 423-389.000.

Proebsting, Robert J., to Mostek Corporation. Single layer burn-in tape for integrated circuit. 4,386,389, Cl. 361-406.000.

Projectus Industriprodukter AB: *See*—
Gustafsson, Berth U., 4,385,686, Cl. 198-434.000.

Pronk, Jacobus N.: *See*—
Van Heteren, Jan; Pronk, Jacobus N.; Smeenk, Willem J.; and Vermass, Leo F., 4,386,111, Cl. 426-603.000.

Pronzati, Attilio. Ski sticks provided with interchangeable wheels. 4,385,776, Cl. 280-824.000.

Protze, Dieter: *See*—
Bauer, Andreas; and Protze, Dieter, 4,385,549, Cl. 98-2.000.

Prusak, John J., to RCA Corporation. Cathode head. 4,385,978, Cl. 204-281.000.

Pstras, Zbigniew; and Kuczera, Stanislaw, to Biuro Projectow Przemyslu Metali Niezelaznych "BIPROMET". Device for compensation of the movement of the pipelines which supply two gaseous agents into an industrial revolving appliance. 4,385,778, Cl. 285-134.000.

Pugh, Charles D., to Burlington Industries, Inc. Data transmission system. 4,386,426, Cl. 370-85.000.

Puhringer, Josef. Process for impregnating cellulosic materials and products hereby obtained. 4,386,134, Cl. 428-447.000.

Pullen, William C.: *See*—
Hovis, Victor M., Jr.; Pullen, William C.; Kollie, Thomas G.; and Bell, Richard T., 4,385,943, Cl. 148-31.500.

Purdum, William R., to Monsanto Company. Cyanoalkylphosphonate diesters of N-phosphonomethylglycinonitrile as herbicides. 4,385,921, Cl. 71-86.000.

Quaglia, Giovanni B.; and Massacci, Angelo, to Consiglio Nazionale Delle Ricerche. Process for the preparation of incoagulable blood by means of proteolytic enzymes and protein concentrate prepared therefrom. 4,386,161, Cl. 435-269.000.

Quik-To-Fix Products, Inc.: *See*—
Shelton, Charles L., 4,385,420, Cl. 17-26.000.

Raasch, Hans; Lenzen, Jakob; and Pohl, Klaus, to W. Schlafhorst & Co. Open-end spinning device. 4,385,488, Cl. 57-417.000.

Rabbat, Naguib B. G.: *See*—
Hsieh, Hsueh Y.; and Rabbat, Naguib B. G., 4,386,403, Cl. 364-300.000.

Rajala, Robert L.: *See*—
Granberg, Mauritz L.; Hanson, David G.; Rajala, Robert L.; and Whipple, William G., 4,386,349, Cl. 340-723.000.

Rajappa, Srinivasachari; and Sudarsanam, Vasudevan, to Ciba-Geigy Corporation. Benzimidazoles, processes for their preparation and pharmaceutical preparations containing such compounds. 4,386,097, Cl. 424-270.000.

Ralph Blatchford & Company Limited: *See*—
Blatchford, Michael I., 4,385,861, Cl. 414-542.000.

Ramage, Michael P.: *See*—
Gross, Benjamin; and Ramage, Michael P., 4,385,985, Cl. 208-113.000.

Ramco Manufacturing, Inc.: *See*—
Ramsauer, Larry R.; and Scholer, Ronald M., 4,385,724, Cl. 236-25.00A.
Ramsaier, Manfred: *See*—
Philipp, Gerd; Ramsaier, Manfred; and Schach, Albert, 4,386,240, Cl. 179-90.00K.
Ramsauer, Larry R.; and Scholer, Ronald M., to Ramco Manufacturing, Inc. Apparatus for controlling the water temperature of a spa. 4,385,724, Cl. 236-25.00A.
Rasala, Edward; Wallach, Steven; Alsing, Carl J.; Holberger, Kenneth D.; Holland, Charles J.; West, Thomas; Guyer, James M.; Coyle, Richard W.; Ziegler, Michael L.; and Druke, Michael B., to Data General Corporation. Data processing system. 4,386,399, Cl. 364-200.000.
Rasberger, Michael, to Ciba-Geigy Corporation. 6-Piperidinodibenz[d,g][1,3,6,2]dioxathiophosphocine. 4,386,204, Cl. 546-21.000.
Raskin, Seymour H. Aircraft weighing systems. 4,385,527, Cl. 73-862.040.
Rasshofer, Werner; Dieterich, Dieter; and Meyborg, Holger, to Bayer Aktiengesellschaft. Polyamines and processes for the production of such polyamines and of polyurethane plastics therefrom. 4,386,218, Cl. 564-38.000.
Raychem Corporation: *See*—
Campbell, Bruce D.; and Chapman, Lynn O., 4,385,645, Cl. 138-139.000.
Link, William T.; Fritsche, Joel L.; and Crisp, Donald E., 4,385,515, Cl. 72-416.000.
Raytheon Company: *See*—
Bowen, Robert F.; Freedman, George; and Teich, Wesley W., 4,386,109, Cl. 426-241.000.
RCA Corporation: *See*—
Altman, Ted N., 4,386,375, Cl. 358-327.000.
Banks, Arthur J., 4,386,368, Cl. 358-150.000.
Berkman, Samuel; and Corboy, John F., 4,386,255, Cl. 219-10.49R.
Channin, Donald J., 4,385,805, Cl. 350-334.000.
George, John B., 4,386,371, Cl. 358-194.100.
Gibson, Walter G.; and Christensen, Roy M., 4,386,434, Cl. 455-37.000.
Harwood, Leopold A.; and Shanley, Robert L., II, 4,386,370, Cl. 358-166.000.
Hollo, Richard B., 4,385,824, Cl. 355-3.0SH.
Hunter, Richard E., Jr., 4,386,377, Cl. 358-335.000.
Kessler, Sebastian W., Jr.; and Reed, Robert E., 4,386,362, Cl. 357-68.000.
Kocher, Christopher P.; and Abramovich, Abe, 4,386,436, Cl. 455-151.000.
McGinniss, Vincent D., 4,386,319, Cl. 324-300.000.
Prusak, John J., 4,385,978, Cl. 204-281.000.
Shanley, Robert L., II; and Parker, Robert P., 4,386,369, Cl. 358-166.000.
Swartz, George A., 4,385,971, Cl. 204-129.100.
Wacyk, Ihor T.; and Stewart, Roger G., 4,386,284, Cl. 307-260.000.
Rebafka, Walter; Schossig, Juergen; Reiss, Wolfgang; and Voges, Dieter, to BASF Aktiengesellschaft. Preparation of N-alkylpiperidines and N-alkylpyrrolidines. 4,386,208, Cl. 546-184.000.
Recognition Equipment Inc.: *See*—
Neff, Marion W., 4,386,433, Cl. 382-48.000.
Redland Technology Limited: *See*—
Aston, Geoffrey W.; Moles, Frank D.; Smart, Roderick M.; and Tate, Andrew H. J., 4,385,917, Cl. 65-21.300.
Redman, Frank B.: *See*—
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Redovian, Martin. Drop-in pattern stitch assembly for a straight stitch sewing machine. 4,385,572, Cl. 112-158.00R.
Reece Corporation, The: *See*—
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Reed International Limited: *See*—
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Reed Ltd.: *See*—
Stradal, Milos, 4,385,997, Cl. 210-784.000.
Reed, Robert E.: *See*—
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Reed, Russell, Jr.; Chan, May L.; and Stanton, Horace D., to United States of America, Navy. In situ cured booster explosive. 4,385,948, Cl. 149-19.500.
Reeves, David L. R.: *See*—
Mason, Leslie F. A.; Kitzing, Rainer; Whitear, Brian R. D.; Long, William E.; Wood, Glenn P.; and Reeves, David L. R., 4,386,149, Cl. 430-213.000.
Regehr, John L.; and Schloss, Phillip C., to International Business Machines Corporation. Line printer attachment. 4,386,359, Cl. 346-35.000.
Reibling, Robert L., to Whiteway Manufacturing Co. Lighting unit for providing indirect light of uniform intensity. 4,386,392, Cl. 362-297.000.
Reich, Karl; and Tomaschek, Heinz A., to Teroson G.m.b.H. Cyanoacrylate adhesive composition. 4,386,193, Cl. 526-298.000.
Reichard, William G.: *See*—
Spain, Stanley R.; and Reichard, William G., 4,385,704, Cl. 212-269.000.
Reichenbach, Jerry D.; and Passarelli, Jamie R., to CR Industries. Molded article knock-out method. 4,386,047, Cl. 264-334.000.
Reichert, William W.; Cody, Charles A.; and Youngken, Carle H., to NL Industries, Inc. Zinc hydroxy phosphite complex. 4,386,059, Cl. 423-307.000.
Reichman, James M.; O'Hanlon, Thomas A.; and Kendrew, Thomas J., to Electric Power Research Institute, Inc. Cable reaming apparatus. 4,385,667, Cl. 175-53.000.
Reilly Tar & Chemical Corporation: *See*—
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Reis, August K.; Kirmaier, Norbert L.; and Schoberl, Meinolf H. A., to Reis, August K. Process for disinfecting water. 4,385,973, Cl. 204-149.000.
Reisenweber, Karl-Ullrich; and Grafenegger, Franz, to MTU Motoren- und Turbinen-Union Muenchen GmbH. Radial bearing for high-speed turbomachinery. 4,385,787, Cl. 384-114.000.
Reiss, Wolfgang: *See*—
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Renaud, Paul, Jr.; and Paradis, Kenneth, to Worcester Controls Corporation. Self-relieving seat and ball valve incorporating the same. 4,385,747, Cl. 251-315.000.
Rentzea, Costin; Feuerherd, Karl-Heinz; Zeeh, Bernd; and Jung, Johann, to BASF Aktiengesellschaft. 1,3-Dioxan-5-yl-alkyltriazoles, their preparation, their use for regulating plant growth, and regulators containing these compounds. 4,385,925, Cl. 71-92.000.
Research Corporation: *See*—
Beadle, Ralph E., 4,386,062, Cl. 424-9.000.
Kjelgaard, William L.; and Anderson, Paul M., 4,385,500, Cl. 62-51.000.
Waldhalm, Donald G., 4,386,065, Cl. 424-89.000.
Research Foundation of the City University of New York: *See*—
Lavallee, David K., 4,386,087, Cl. 424-245.000.
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Papistok, Heinz; and Reuter, Herbert, 4,385,855, Cl. 409-24.000.
ReVelle, Charles S. Rollable toy. 4,385,466, Cl. 46-100.000.
Reynolds Metals Company: *See*—
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Persson, John A., 4,385,930, Cl. 75-10.00R.
Persson, John A., 4,385,930, Cl. 75-10.00R.
Rhodes, Joanne. Sanitary cushioning device for sink bowl edges. 4,385,408, Cl. 4-523.000.
Rhone-Poulenc Industries: *See*—
Artur, Andre; Dehut, Alain; and Canard, Pierre, 4,386,169, Cl. 523-200.000.
Chauvel, Bernard, 4,386,131, Cl. 428-288.000.
Rhythm Watch Co., Ltd.: *See*—
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Ricaud, Jean-Louis; Briez, Pierre R.; and Sajot, Pierre, to Commisariat a l'Energie Atomique. Removable contactless transmission clamp assembly system. 4,386,280, Cl. 307-145.000.
Rice, Max. Weighted rotatable therapeutic exercise device. 4,385,761, Cl. 272-144.000.
Richardson, Donald; and Hoekstra, Joop F., to Reece Corporation, The. Garment placket and method of forming. 4,385,403, Cl. 2-96.000.
Richter, Bruno; and Brand, Bernhard, to Dipl.-Ing. Bruno Richter. Method and apparatus for producing a trigger signal. 4,386,322, Cl. 328-63.000.
Richter, Gary W., to General Mills, Inc. Coated coconut, method of preparation and icing therefrom. 4,386,108, Cl. 426-93.000.
Richter, Hans H. Rotary vane type pump or motor and the like with circular chamber portions. 4,385,873, Cl. 418-23.000.
Rickett, Royal C. Road test simulator. 4,385,518, Cl. 73-117.000.
Ricoh Co., Ltd.: *See*—
Kaneko, Tamaki, 4,385,825, Cl. 355-3.0SH.
Kondo, Mitsuru; and Konishi, Akira, 4,386,373, Cl. 358-260.000.
Riebel, Hans-Jochem: *See*—
Maurer, Fritz; Priesnitz, Uwe; Riebel, Hans-Jochem; Fuchs, Rainer; and Klauke, Erich, 4,386,035, Cl. 260-463.000.
Riggs, Edward J.: *See*—
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Rimmele, Karl: *See*—
Bieri, Hans; and Rimmele, Karl, 4,385,538, Cl. 83-169.000.
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Risk, Robert J.; and Shanks, Ian A., to National Research Development Corporation. Random pattern generator. 4,386,411, Cl. 364-521.000.
Riso Kagaku Corporation: *See*—
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Rivier, Jean E. F.: *See*—
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Roach, James F.: *See*—
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Robert Bosch GmbH: *See*—
Bosse, Bernhard; Kemmner, Ulrich; Klinkenberg, Reinhard; Knapp, Heinrich; and Wissmann, Michael, 4,385,603, Cl. 123-339.000.
Braun, Kurt; Laupp, Gerhard; Leich, Rolf; Saur, Walter; Scheifele, Horst; and Schick, Jurgen, 4,385,670, Cl. 177-1.000.
Eheim, Franz; Geiger, Wolfgang; and Stadler, Werner, 4,385,614, Cl. 123-506.000.
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Orova, Josef; and Podrapsky, Jiri, 4,385,601, Cl. 123-335.000.
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Roberts, Clifford: *See*—
Roberts, Hubert P.; and Roberts, Clifford, 4,385,565, Cl. 108-152.000.
Roberts, Hubert P.; and Roberts, Clifford. Shelf support. 4,385,565, Cl. 108-152.000.
Roberts, John T., to UOP Inc. Imines of aminodiphenyl esthers as antioxidants and lubricating oils and greases containing same. 4,386,002, Cl. 252-47.500.
Roberts, Thomas: *See*—
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Robinson, Warn D.: *See*—
Mount, Ramon A.; and Robinson, Warn D., 4,386,215, Cl. 549-259.000.
Robinson, William P., to Hydraulic Servocontrols Corporation. Bi-stable electrically operated valve. 4,385,642, Cl. 137-885.000.
Roch, Charles; and Golay, Louis C., to Piere Roch S.a.r.l. Pistol-grip instrument for measurement of inside diameters. 4,385,446, Cl. 33-178.00R.
Rock, Erich; and Brustle, Klaus. Quadrilateral over center hinge. 4,385,417, Cl. 16-288.000.
Rock, Erich: *See*—
Brustle, Klaus; and Rock, Erich, 4,385,416, Cl. 16-249.000.
Rocquin, Camille J. Hanging planter apparatus. 4,385,742, Cl. 248-318.000.
Rodell, John T.: *See*—
Cope, Bernard; Lynch, Kenneth R.; O'Donnell, Daniel H.; Rodell, John T.; Turechek, William W.; and Unterberger, Robert M., 4,386,400, Cl. 364-200.000.
Rogers, Howard G.: *See*—
Locatell, Louis, Jr.; Rogers, Howard G.; Bilofsky, Ruth C.; Ciecciuch, Ronald F.; and Zepp, Charles M., 4,386,216, Cl. 549-394.000.
Roggwiller, Peter; and Sittig, Roland, to BBC, Brown, Boveri & Company, Limited. Process for the cutting-off of a thyristor. 4,386,283, Cl. 307-252.00R.
Rolke, Hans J.: *See*—
Schuster-Wolden, Hans; Freller, Helmut; Kruger, Hans; Welsch, Wofgang; Peetermans, Andre; Rolke, Hans J.; and Schack, Peter, 4,385,976, Cl. 204-192.00P.
Rolls-Royce Limited: *See*—
Hewitt, Frank A.; and Tillen, Keith G., 4,385,914, Cl. 62-536.000.
Romer, Michael: *See*—
Krause, Joachim; Romer, Michael; and Pohl, Ludwig, 4,386,007, Cl. 252-299.620.
Ronco Teleproducts, Inc.: *See*—
Popeil, Ronald M.; and Backus, Alan L., 4,385,911, Cl. 55-316.000.
Ronhaug, Jan B.: *See*—
Wallevik, Oddmund; and Ronhaug, Jan B., 4,385,931, Cl. 75-67.00A.
Rope, Eugene L.: *See*—
Tricoles, Gus P.; and Rope, Eugene L., 4,386,356, Cl. 343-113.00R.
Rose, John B.: *See*—
Cogswell, Frederic N.; Griffin, Brian P.; and Rose, John B., 4,386,174, Cl. 524-27.000.
Rosenberg, Heinz J.: *See*—
Zodrow, Rudolf; Rosenberg, Heinz J.; and Buchholz, Rainer, 4,385,960, Cl. 156-568.000.
Rosenthal, Joel W.; and Wallman, P. Henrik, to Chevron Research Company. Process for retorting oil shale mixtures with added carbonaceous material. 4,385,983, Cl. 208-11.00R.
Rosevear, Alan; and Mattock, Patrick, to United Kingdom Atomic Energy Authority. Affinity chromatography separation process. 4,385,991, Cl. 210-635.000.
Rossi, Gregory R., to Bethlehem Steel Corporation. Method for cleaning a process monitoring probe. 4,385,936, Cl. 134-18.000.
Rothwell, Harold L.; Keeffe, William M.; and English, George J., to GTE Products Corporation. Projection lamp comprising single ended arc discharge lamp and an interference filter. 4,386,292, Cl. 313-112.000.
Roto-Finish Company, Inc.: *See*—
Balz, Gunther W., 4,385,472, Cl. 51-7.000.
Rotoflow Corporation, Inc.: *See*—
Swearingen, Judson S., 4,385,768, Cl. 277-1.000.
Rottmaier, Ludwig: *See*—
Giesecke, Henning; Merten, Rudolf; and Rottmaier, Ludwig, 4,386,213, Cl. 548-264.000.
Roussel Uclaf: *See*—
Heymes, Rene, 4,386,210, Cl. 548-194.000.
Roussell Uclaf: *See*—
Teutsch, Jean G.; Costerousse, Germain; Philibert, Daniel; and Deraedt, Roger, 4,386,085, Cl. 424-238.000.
Royer, Leon D.: *See*—
Dille, William A.; Erickson, Wayne E.; and Royer, Leon D., 4,386,132, Cl. 428-372.000.
Rudolph, Frank W.: *See*—
Mead, Ralph T.; Rudolph, Frank W.; Frenz, Norbert W., Jr.; and Greathatch, Wilson, 4,385,439, Cl. 29-623.200.
Ruell, Hartwig, to Siemens Corporation. Device for investigation of a finger relief. 4,385,831, Cl. 356-71.000.
Ruhrkohle Aktiengesellschaft: *See*—
Stewen, Wilhelm; and Weskamp, Wilhelm, 4,385,962, Cl. 201-6.000.
Ruiz, Oscar F. Angiographic catheter with soft tip end. 4,385,635, Cl. 128-658.000.
Rump, Peter W.: *See*—
Bitsch, Harald; Donner, Klaus; Horbach, Rainer; and Rump, Peter W., 4,385,562, Cl. 105-163.00R.
Rutter, Jerry L., to Gulf Oil Corporation. Phthalimidoguanidine plant growth regulators. 4,386,201, Cl. 544-144.000.
S. Franzen Sohne (GmbH & Co.): *See*—
Milles, Peter; and Duringer, Rudi, 4,385,509, Cl. 70-304.000.
S.H.E. Corporation: *See*—
Simmonds, Michael B., 4,386,361, Cl. 357-5.000.
Sachuk, Nicholas E.: *See*—
Wille, Michael T.; and Sachuk, Nicholas E., 4,385,812, Cl. 350-587.000.
Saeki, Michio, to Honeywell Inc. Method and apparatus for process control. 4,386,397, Cl. 364-148.000.
Saether, Torstein; and Heggset, Bjarne, to Ardal og Sunndal Verk A/S. Apparatus for discontinuous charging of molten metal into a vacuum chamber. 4,385,751, Cl. 266-207.000.
Saito, Takeo, to Seiko Koki Kabushiki Kaisha. Focusing detecting device. 4,385,817, Cl. 354-25.000.
Saito, Tatsuo, to Pioneer Electronic Corporation. Magnetic circuit for dynamic speaker. 4,386,332, Cl. 335-231.000.
Sajot, Pierre: *See*—
Ricaud, Jean-Louis; Briez, Pierre R.; and Sajot, Pierre, 4,386,280, Cl. 307-145.000.
Sakabe, Toshiaki: *See*—
Yamamoto, Yasunobu; Sakabe, Toshiaki; and Hamada, Eiji, 4,385,682, Cl. 192-107.00M.
Sakaguchi, Toyoshige: *See*—
Nagasawa, Ikuo; Mukae, Kazuo; Tsuda, Koichi; Ishii, Takashi; and Sakaguchi, Toyoshige, 4,386,022, Cl. 252-521.000.
Sakai, Hiroyoshi: *See*—
Komeyasu, Minoru; Miura, Yoshisuke; and Sakai, Hiroyoshi, 4,386,110, Cl. 426-244.000.
Sakai, Masato: *See*—
Ochiai, Toshihiko; Nakamura, Kiyoshi; Nishida, Katsutoshi; and Sakai, Masato, 4,385,866, Cl. 416-241.00B.
Sakata, Shinji: *See*—
Machida, Haruhiko; and Sakata, Shinji, 4,386,076, Cl. 424-180.000.
Sakpanov, Egizbai S.: *See*—
Abishev, Dzhantore N.; Buketov, Evnei A.; Baltynova, Nazymkul; Malyshev, Vitaly P.; Oralov, Turabai A.; Sakpanov, Egizbai S.; Kobzhasov, Abubakir K.; and Orazalina, Kazken N., 4,386,061, Cl. 423-571.000.
Sakurai, Kazuhiro; Sawada, Hiroshi; and Hattori, Kyo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Engine mixture control system controlling primary and secondary air-fuel mixtures. 4,385,491, Cl. 60-276.000.
Salk Institute for Biological Studies, The: *See*—
Vale, Wylie W., Jr.; and Rivier, Jean E. F., 4,386,074, Cl. 424-177.000.
Salvagnini, Guido, to Salvagnini Transferica S.p.A. Forming presses. 4,385,513, Cl. 72-320.000.
Salvagnini Transferica S.p.A.: *See*—
Salvagnini, Guido, 4,385,513, Cl. 72-320.000.
Samuels, Stephen S. Physiognomically based puzzle toy. 4,385,467, Cl. 46-16.000.
Samuelson, Harry V., to Du Pont de Nemours, E. I., and Company. Spinneret plate. 4,385,886, Cl. 425-464.000.
Sanborn, David M.; and Blackshaw, Andrew L. Connection assembly. 4,385,723, Cl. 236-18.000.
Sanders Associates, Inc.: *See*—
Bauer, James W., 4,386,428, Cl. 372-41.000.
Sanders, James M.: *See*—
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,386,064, Cl. 424-49.000.
Sandoz Ltd.: *See*—
Baumann, Hans-Peter, 4,386,037, Cl. 260-512.00C.
Fleck, Fritz, 4,386,200, Cl. 542-441.000.
Sangamo Weston, Inc.: *See*—
Becker, Dale F., 4,386,314, Cl. 324-110.000.
Emile, Philip, Jr.; and Kroeger, James K., 4,386,308, Cl. 320-22.000.
Venaas, Norman B.; and Becker, Dale F., 4,386,313, Cl. 324-110.000.
Sanraku-Ocean Co., Ltd.: *See*—
Oki, Toshikazu; Yoshimoto, Akihiro; Kouno, Kageaki; Inui, Taiji; Takeuchi, Tomio; and Umezawa, Hamao, 4,386,198, Cl. 536-6.400.
Sansone, Ronald P.: *See*—
Check, Frank T., Jr.; and Sansone, Ronald P., 4,386,272, Cl. 250-236.000.

Santa Barbara Research Center: *See*—
Gardner, Leland V., 4,385,833, Cl. 356-141.000.

Santen Pharmaceutical Co., Ltd.: *See*—
Iwao, Junichi; Oya, Masayuki; Baba, Toshio; Iso, Tadashi; and Chiba, Takehisa, 4,386,096, Cl. 424-270.000.

Sarkadi, Adam: *See*—
Kisfaludy, Lajos; Szirtes, Tamas; Balaspiri, Lajos; Palosi, Eva; Szporny, Laszlo; and Sarkadi, Adam, 4,386,073, Cl. 424-177.000.

Sasaki, Akiyosi: *See*—
Ihara, Keisuke; Takayama, Atsushi; Tanioka, Susumu; Toda, Kazuo; Sasaki, Akiyosi; and Hoshino, Shoji, 4,385,553, Cl. 99-510.000.

Sasaki, Seiko; and Asano, Kazuhiro, to Kabushiki Kaisha Daini Seikosha. Electronic timepiece having multi-functions. 4,386,423, Cl. 368-73.000.

Sasaki, Takao: *See*—
Imazeki, Ryoji; Yamazaki, Etsuo; Sasaki, Takao; and Yamaguchi, Masashi, 4,386,408, Cl. 364-474.000.

Sassak, Frank, to McInerney Spring & Wire Company. Pipe assembly tool. 4,385,514, Cl. 72-416.000.

Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Kuwana, Noriaki; Abe, Shinya; and Yamada, Kouzi, to Eisai Co., Ltd.; and General Director of the Agency of Industrial Science and Technology. Two-functional-group-containing terpenoids. 4,386,227, Cl. 568-875.000.

Sato, Atsuhige; Miura, Ishi; Kumei, Yasuhiro; Okuno, Osamu; and Yoshida, Bunsaku, to Sato, Atsushige; Miura, Ishi; and G-C Dental Industrial Corp. Setting compositions for dental purposes. 4,385,892, Cl. 433-228.000.

Sato, Fumihiro; Iwasaki, Masayuki; Terada, Takashi; Ninomiya, Hiroshi; and Nakada, Minoru, to Nippon Kayaku Kabushiki Kaisha. Process for producing polyacrylic acid salt granules easily soluble in water. 4,386,120, Cl. 427-213.000.

Sato, Masamichi; and Matsumoto, Kenji. Multicolor optical filters and process for producing the same. 4,386,143, Cl. 430-7.000.

Sato, Takuro: *See*—
Masuda, Yoshio; Fukasawa, Atsushi; Sato, Takuro; Yoshida, Tatsumasa; and Ando, Hiromi, 4,386,328, Cl. 333-202.000.

Satoh, Masaharu, to Sharp Kabushiki Kaisha. Melody generation in an electronic cash register. 4,386,340, Cl. 340-384.00E.

Saunders, Hollis S.; Carmer, Richard V.; and Payette, Lionel J., to United Technologies Corporation. Method of power inserting polyamide-imide coated magnet wire. 4,385,435, Cl. 29-596.000.

Saunders, Hollis S.; Carmer, Richard V.; and Payette, Lionel J., to United Technologies Corporation. Method of power inserting nylon coated magnet wire. 4,385,436, Cl. 29-596.000.

Saunders, Hollis S.; Carmer, Richard V.; and Payette, Lionel J., to United Technologies Corporation. Method of power inserting polyamide-imide coated magnet wire. 4,385,437, Cl. 29-596.000.

Saur, Walter: *See*—
Braun, Kurt; Laupp, Gerhard; Leich, Rolf; Saur, Walter; Scheifele, Horst; and Schick, Jurgen, 4,385,670, Cl. 177-1.000.

Savage, Donald J., to United States of America, Navy. Device for economizing data bandwidth. 4,386,321, Cl. 328-25.000.

Savla, Chandrakant V.: *See*—
Steiner, Robert E.; and Savla, Chandrakant V., 4,385,550, Cl. 98-43.00R.

Savoie, Hilbert J., Jr. Rotary pump apparatus with plural abutting pumping segments. 4,385,874, Cl. 418-56.000.

Sawada, Daisaku: *See*—
Hattori, Tadashi; Goto, Kenji; Sawada, Daisaku; Shigematu, Takashi; Yamaguchi, Hiroaki; and Nishida, Minoru, 4,385,606, Cl. 123-416.000.

Sawada, Hiroshi: *See*—
Sakurai, Kazuhiro; Sawada, Hiroshi; and Hattori, Kyo, 4,385,491, Cl. 60-276.000.

Sawazaki, Masatoshi, to Precision Fukuhara Works, Ltd. Yarn feeding and changing apparatus for circular knitting machines. 4,385,507, Cl. 66-140.00R.

Sawicki, Robert A.; and Kaufman, Benjamin J., to Texaco Inc. Novel corrosion inhibitor for alcohol fuels. 4,385,904, Cl. 44-56.000.

Scan Optics: *See*—
Ellsworth, Daniel H., 4,385,758, Cl. 271-224.000.

Scavuzzo, Robert J., to Bell Telephone Laboratories, Incorporated. Emitter function logic (EFL) shift register. 4,386,282, Cl. 377-81.000.

Schach, Albert: *See*—
Philipp, Gerd; Ramsaier, Manfred; and Schach, Albert, 4,386,240, Cl. 179-90.00K.

Schack, Peter: *See*—
Schuster-Wolden, Hans; Freller, Helmut; Kruger, Hans; Welsch, Wofgang; Peetermans, Andre; Rolke, Hans J.; and Schack, Peter, 4,385,976, Cl. 204-192.00P.

Schafer, Ludwig: *See*—
Ehrlich, Karl; Vaidya, Waman; and Schafer, Ludwig, 4,385,933, Cl. 75-124.00C.

Schamber, Arlen R.: *See*—
McGinley, Charles M.; Schamber, Arlen R.; Melin, Denny L.; Christensen, Ronald L.; Tazzia, Edward K.; Hackbarth, Richard W.; Fogarty, Terry M.; and Faint, Richard C., 4,385,987, Cl. 210-150.000.

Scharwaechter, Peter; Gutsche, Klaus; Kohlmann, Friedrich-Wilhelm; and Beck, Hinrich, to BASF Aktiengesellschaft. N-Pyrimidinyl-carbamic acid esters, their preparation, and drugs containing these compounds. 4,386,084, Cl. 424-229.000.

Schauer, Wolfgang: *See*—
Krevet, Berthold; Schauer, Wolfgang; and Wuchner, Fritz, 4,386,115, Cl. 427-62.000.

Scheck, Georg; and Storandt, Ralf, to Gezze GmbH. Ski safety binding. 4,385,773, Cl. 280-612.000.

Scheifele, Horst: *See*—
Braun, Kurt; Laupp, Gerhard; Leich, Rolf; Saur, Walter; Scheifele, Horst; and Schick, Jurgen, 4,385,670, Cl. 177-1.000.

Schellenberg, James M., to Hughes Aircraft Company. Planar chip-level power combiner. 4,386,324, Cl. 330-277.000.

Schepel, Donald D. Feed level indicator. 4,385,672, Cl. 177-207.000.

Scherping, Clarence K.; and Parth, Wesley J., to Baker Perkins Inc. Split wear liner for twin bore barrel assembly. 4,385,876, Cl. 418-201.000.

Scheuerpflug, Wolfgang; and Monnich, Erbo, to Kernforschungszentrum Karlsruhe G.m.b.H. Lock structure for entry and exit passages of sensitive installation. 4,385,469, Cl. 49-41.000.

Schick, Jurgen: *See*—
Braun, Kurt; Laupp, Gerhard; Leich, Rolf; Saur, Walter; Scheifele, Horst; and Schick, Jurgen, 4,385,670, Cl. 177-1.000.

Schiff, Jonathan D.: *See*—
Gilcher, Ronald O.; Latham, Allen, Jr.; Schiff, Jonathan D.; and Schoendorfer, Donald W., 4,385,630, Cl. 604-31.000.

Schiff, Sidney: *See*—
Heckelsberg, Louis F.; Nelson, William T.; Schiff, Sidney; and Zuech, Ernest A., 4,386,229, Cl. 585-255.000.

Schiller, Joseph E.; and Khalafalla, Sanaa E., to United States of America, Interior. Removal of suspended solids from water. 4,385,998, Cl. 210-807.000.

Schimko, Reinhold, to Universal Maschinenfabrik Dr. Schieber GmbH. Guard for the zone of movement of the carriage of a flatbed knitting machine. 4,385,508, Cl. 66-157.000.

Schirmer, Robert M.; and Fromm, Ellsworth H., to Phillips Petroleum Company. Combustors and methods of operating same. 4,385,490, Cl. 60-39.230.

Schlosberg, Richard H.: *See*—
Neskora, Daniel R.; and Schlosberg, Richard H., 4,385,981, Cl. 208-8.00R.

Schloss, Phillip C.: *See*—
Regehr, John L.; and Schloss, Phillip C., 4,386,359, Cl. 346-35.000.

Schmidt, Manfred: *See*—
Van Landeghem, Willy K.; De Maayer, Petrus J.; Loots, Francois P.; Pattyn, Hendrik A.; Bauer, Walter; Farber, Heinrich; Muller, Jurgen; and Schmidt, Manfred, 4,386,431, Cl. 378-187.000.

Schmidt, Phillip A., to Weyerhaeuser Company. Feed roll with spikes. 4,385,650, Cl. 144-246.00C.

Schmitt, Frederick L.: *See*—
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,386,064, Cl. 424-49.000.

Schmitt, Walter, to Dr. Johannes Heidenhain GmbH. Photoelectric digital position measuring system. 4,385,836, Cl. 356-374.000.

Schnapper, Christoph: *See*—
Intichar, Lutz; Schnapper, Christoph; and Weghaupt, Erich, 4,386,289, Cl. 310-52.000.

Schneider, Franz: *See*—
Bergmann, Ewald; Schneider, Franz; Hoffmann, Hartmut; Schumann, Burkhard; and Grupp, Gunther, 4,386,304, Cl. 318-561.000.

Schoberl, Meinolf H. A.: *See*—
Reis, August K.; Kirmaier, Norbert L.; and Schoberl, Meinolf H. A., 4,385,973, Cl. 204-149.000.

Schoendorfer, Donald W.: *See*—
Gilcher, Ronald O.; Latham, Allen, Jr.; Schiff, Jonathan D.; and Schoendorfer, Donald W., 4,385,630, Cl. 604-31.000.

Scholer, Ronald M.: *See*—
Ramsauer, Larry R.; and Scholer, Ronald M., 4,385,724, Cl. 236-25.00A.

Scholten, Heinz: *See*—
Panoch, Hans J.; Scholten, Heinz; and Feldmann, Rainer, 4,386,197, Cl. 528-324.000.

Scholten, Joseph J. F.; and vande Leemput, Lambertus J. M. A., to Stamicarbon, B.V. Preparation of porous, pure silica dioxide and of chromium-oxide-on-silica dioxide catalysts. 4,386,016, Cl. 252-458.000.

Schossig, Juergen: *See*—
Rebafka, Walter; Schossig, Juergen; Reiss, Wolfgang; and Voges, Dieter, 4,386,208, Cl. 546-184.000.

Schram, Richard R., to Irvine Optical Corporation. Apparatus and system for linewidth measurements. 4,385,837, Cl. 356-387.000.

Schranz, Karl-Wilhelm: *See*—
Bergthaller, Peter; Kunitz, Friedrich-Wilhelm; Schranz, Karl-Wilhelm; and Wolff, Erich, 4,386,155, Cl. 430-372.000.

Schreder, Felix: *See*—
Fischer, Karl; and Schreder, Felix, 4,386,263, Cl. 219-449.000.

Schriever, Frederick G. Escape/rescue system. 4,385,586, Cl. 116-205.000.

Schroeder, Dirk: *See*—
Hagen, Jurgen; Hetz, Walter; Hetzel, Gert; and Schroeder, Dirk, 4,385,521, Cl. 73-619.000.

Schroeder, Wolfgang: *See*—
Merger, Franz; Miesen, Ernest; Broecker, Franz J.; Schroeder, Wolfgang; Baer, Karl; Paetsch, Juergen; and Hupfer, Leopold, 4,386,018, Cl. 252-465.000.

Merger, Franz; Miesen, Ernest; Broecker, Franz J.; Schroeder, Wolfgang; Baer, Karl; Paetsch, Juergen; and Hupfer, Leopold, 4,386,219, Cl. 568-853.000.
Schuck, Helmut: *See*—
Johne, Hans; Jentzsch, Arndt; Muller, Wolfgang; Forster, Karl-Heinz; and Schuck, Helmut, 4,385,560, Cl. 101-365.000.
Schucker, Thomas R., to Allis-Chalmers Corporation. Counteracting lug and lifting fixture for the counterweight of a bulb turbine. 4,385,865, Cl. 415-150.000.
Schuette, Wilhelm; Hilt, Albrecht; Walter, Manfred; and Boehlke, Klaus, to BASF Aktiengesellschaft. Polyacetals having an improved maximum sustained-use temperature. 4,386,178, Cl. 524-100.000.
Schumann, Burkhard: *See*—
Bergmann, Ewald; Schneider, Franz; Hoffmann, Hartmut; Schumann, Burkhard; and Grupp, Gunther, 4,386,304, Cl. 318-561.000.
Schuster-Wolden, Hans; Freller, Helmut; Kruger, Hans; Welsch, Wolfgang; Peetermans, Andre; Rolke, Hans J.; and Schack, Peter, to Siemens AG. Solderable layer system, its use and method for manufacturing same. 4,385,976, Cl. 204-192.00P.
Schwam, Harvey: *See*—
Woltersdorf, Otto, Jr.; Michelson, Stuart R.; Sondey, John M.; and Schwam, Harvey, 4,386,098, Cl. 424-270.000.
Schwartz, Reinhard: *See*—
Straubel, Max; Schwartz, Reinhard; Ritter, Ernst; and Djordjevic, Ilija, 4,385,867, Cl. 417-63.000.
Schwartz, Roland, to Comano S.A. Electronic matching and information association game. 4,385,762, Cl. 273-1.0GC.
Scott, Dan J. Propulsion system for water wheel. 4,385,497, Cl. 60-639.000.
Scott, Delmer D.: *See*—
Norris, Curtis; and Scott, Delmer D., 4,385,785, Cl. 301-37.0SS.
Segal, Leon: *See*—
Wu, Tse C.; and Segal, Leon, 4,386,196, Cl. 528-182.000.
Seidel, Harold, to Bell Telephone Laboratories, Incorporated. Impedance matching using active couplers. 4,386,242, Cl. 179-170.00T.
Seiko Koki Kabushiki Kaisha: *See*—
Saito, Takeo, 4,385,817, Cl. 354-25.000.
Seikosha Co., Ltd.: *See*—
Maeda, Kyoichi, 4,386,241, Cl. 179-110.00A.
Seiler, Erhard: *See*—
Naarmann, Herbert; Penzien, Klaus; Brandstetter, Franz; Lindenschmidt, Gerhard; and Seiler, Erhard, 4,386,203, Cl. 544-219.000.
Seimiya, Ryubun; Yamada, Yutaka; Tomono, Makoto; Tarumi, Noriyoshi; Fujisaki, Yasuyuki; Takahashi, Minoru; Ogawara, Hiroshi; and Funaki, Hirozo, to Konishiroku Photo Industry Co., Ltd. Toner for developing electrostatic latent images. 4,386,147, Cl. 430-99.000.
Seitoh, Hisao: *See*—
Sumikawa, Yasushi; Seitoh, Hisao; and Kuroda, Masahiro, 4,385,654, Cl. 152-209.00R.
Self, Roger D.: *See*—
Pierce, Danny A.; Heisler, Joseph A.; and Self, Roger D., 4,385,979, Cl. 204-298.000.
Selleri, Narciso: *See*—
Possati, Mario; Golinelli, Guido; and Selleri, Narciso, 4,385,444, Cl. 33-143.00L.
Seng, Stephen: *See*—
Dunn, Charles S.; and Seng, Stephen, 4,385,918, Cl. 65-27.000.
Serlin, Irving; and Gardner, Donald M., to Monsanto Company. Coating compositions comprising allylic alcohol interpolymers. 4,386,184, Cl. 524-425.000.
Setra Systems, Inc.: *See*—
Briefer, Dennis K., 4,386,312, Cl. 324-60.00C.
Sevcik, Ladislav, to ELITEX, koncern textilniho strojirenstvi. Device for programmed change of position of nozzles in jet looms. 4,385,649, Cl. 139-435.000.
Severin, Petrus J. W.: *See*—
Jochem, Cornelis M. G.; and Severin, Petrus J. W., 4,385,916, Cl. 65-3.130.
Sexsmith, David R.; and Libutti, Bruce L., to Drew Chemical Corporation. Corrosion protection package. 4,386,008, Cl. 252-389.00R.
Sexton, James H.: *See*—
Masse, Lucien; Medlin, William L.; and Sexton, James H., 4,385,520, Cl. 73-579.000.
Shakley, Conrad D.: *See*—
Brady, Joseph M.; Cordes, Franz R.; Gedrat, Klaus H.; Goffredo, Daniel L.; Meyer, Walter; and Shakley, Conrad D., 4,385,967, Cl. 204-27.000.
Shanks, Ian A.: *See*—
Risk, Robert J.; and Shanks, Ian A., 4,386,411, Cl. 364-521.000.
Shanley, Robert L., II; and Parker, Robert P., to RCA Corporation. Compensated clamping circuit in a video signal peaking system. 4,386,369, Cl. 358-166.000.
Shanley, Robert L., II: *See*—
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Sharp Kabushiki Kaisha: *See*—
Nonomura, Heisaku; Shimizu, Keiichiro; Kishi, Kohei; and Uede, Hisashi, 4,386,352, Cl. 340-784.000.
Satoh, Masaharu, 4,386,340, Cl. 340-384.00E.
Sharpe, Raymond; Griffiths, Trevor J.; and Hunt, Peter, to Lucas Industries Limited. Couplings. 4,385,894, Cl. 464-31.000.
Shaw, Terrence M., to Cummins Engine Company, Inc. Bottom stop cylinder liner and engine assembly. 4,385,595, Cl. 123-41.840.
Shaw, Timothy; and Burge, Charles T., to Norlin Industries, Inc. Adjustable bridge for a stringed musical instrument. 4,385,543, Cl. 84-298.000.
Shell Oil Company: *See*—
Ayers, Ray R., 4,385,583, Cl. 114-265.000.
Bijwaard, Henricus M. J.; and Morcus, Alphonsus, 4,385,984, Cl. 208-19.000.
Shelton, Charles L., to Quik-To-Fix Products, Inc. Machine for bulk tenderizing operation. 4,385,420, Cl. 17-26.000.
Shen, Tsung-Ying: *See*—
Ponpipom, Mitree M.; Bugianesi, Robert L.; Robbins, James C.; and Shen, Tsung-Ying, 4,386,026, Cl. 260-112.50R.
Sheppard, Thomas F.: *See*—
Lat, Geronimo E.; and Sheppard, Thomas F., 4,386,180, Cl. 524-272.000.
Sherman, Charles F.; Cole, Mark T.; and Nielsen, Helmar, to Nielsen Moulding Design Corporation. Anti-theft frame hanging system. 4,385,744, Cl. 248-551.000.
Sherwood Medical Industries Inc.: *See*—
Fiehler, William R., 4,386,003, Cl. 252-60.000.
Shevitz, Jerry. Electrophoretic system and method for multidimensional analysis. 4,385,974, Cl. 204-180.00G.
Shiba, Haruo, to TDK Electronics Co., Ltd. Ring with rib for winding magnetic tape. 4,385,734, Cl. 242-68.500.
Shigematu, Takashi: *See*—
Hattori, Tadashi; Goto, Kenji; Sawada, Daisaku; Shigematu, Takashi; Yamaguchi, Hiroaki; and Nishida, Minoru, 4,385,606, Cl. 123-416.000.
Shimada, Satoshi, to Sony Corporation. Image display apparatus. 4,386,364, Cl. 358-66.000.
Shimada, Wataru; Machida, Kazumichi; and Okada, Masaru, to Mitsubishi Denki Kabushiki Kaisha. T-Shape joint and preparation thereof. 4,385,720, Cl. 228-166.000.
Shimanuki, Senji: *See*—
Inomata, Koichiro; Hasegawa, Michio; Shimanuki, Senji; and Haga, Masakatsu, 4,385,932, Cl. 75-123.00B.
Shimizu, Junichi; Suzuki, Kazumasa; and Nakajima, Yoshikazu, to Mitsui Sugar Co., Ltd. Method of producing palatinose with immobilized alpha-glucosyl transferase. 4,386,158, Cl. 435-97.000.
Shimizu, Keiichiro: *See*—
Nonomura, Heisaku; Shimizu, Keiichiro; Kishi, Kohei; and Uede, Hisashi, 4,386,352, Cl. 340-784.000.
Shimizu, Tetsuo: *See*—
Kimura, Toshimitsu; and Shimizu, Tetsuo, 4,385,779, Cl. 293-102.000.
Shimogawa, Toshiaki; Kuwakado, Satosi; Tsuge, Noboru; and Takei, Toshihiro, to Nippon Soken, Inc. Seat belt tensioning device for vehicle. 4,385,775, Cl. 280-806.000.
Shinoda, Yoshio: *See*—
Yoshimi, Tomohisa; Kuno, Akira; and Shinoda, Yoshio, 4,386,279, Cl. 307-10.00R.
Shinohara, Koichi, to Matsushita Electric Industrial Co., Ltd. Method of making a magnetic recording medium. 4,386,113, Cl. 427-42.000.
Shinozaki, Fumiaki; Washizawa, Yasuo; Ikeda, Tomoaki; Nakao, Sho; and Kondoh, Syunichi, to Fuji Photo Film Co., Ltd. Light-sensitive photopolymerizable composition. 4,386,153, Cl. 430-285.000.
Shinozaki, Nozomu: *See*—
Neki, Shigeo; Shinozaki, Nozomu; and Dohi, Takashi, 4,386,301, Cl. 318-318.000.
Shinyei Kaisha: *See*—
Kinomoto, Shinichi; Kawamura, Masato; and Kobayashi, Susumu, 4,386,336, Cl. 338-35.000.
Shiraki, Toshinori; Hoshi, Susumu; and Hayano, Fusakazu, to Asahi Kasei Kogyo Kabushiki Kaisha. Film, sheet or tube of a block copolymer or a composition containing the same. 4,386,125, Cl. 428-36.000.
Shiveley, James T. Acoustic emission intruder alarm system. 4,386,343, Cl. 340-566.000.
Shono, Tetsuji, to Asahi Koga U Kogyo Kabushiki Kaisha. Mirrorraising motion braking mechanism. 4,385,820, Cl. 354-152.000.
Siemens AG: *See*—
Schuster-Wolden, Hans; Freller, Helmut; Kruger, Hans; Welsch, Wolfgang; Peetermans, Andre; Rolke, Hans J.; and Schack, Peter, 4,385,976, Cl. 204-192.00P.
Siemens Aktiengesellschaft: *See*—
Christiansen, Hans-Martin, 4,386,424, Cl. 370-4.000.
Hagen, Jurgen; Hetz, Walter; Hetzel, Gert; and Schroeder, Dirk, 4,385,521, Cl. 73-619.000.
Intichar, Lutz; Schnapper, Christoph; and Weghaupt, Erich, 4,386,289, Cl. 310-52.000.
Lewin, Arthur; and Nickel, Bernd, 4,386,405, Cl. 364-415.000.
Ulmer, Wolfgang; and Peterknecht, Klaus, 4,386,435, Cl. 455-139.000.
Siemens Corporation: *See*—
Ruell, Hartwig, 4,385,831, Cl. 356-71.000.
Sievers, Kirk A., to Motorola Inc. Constant frequency automotive alternator battery charging system. 4,386,310, Cl. 322-28.000.
Simmonds, Michael B., to S.H.E. Corporation. Thin film SQUID with low inductance. 4,386,361, Cl. 357-5.000.
Simon, Alexander D.: *See*—
Koford, Stuart K.; Colwell, John C.; and Simon, Alexander D., 4,385,793, Cl. 339-61.00R.
Simpson-DuraVent: *See*—
Jacklich, John R., 4,385,623, Cl. 126-126.000.
Simpson, Lee S., III. Boat anchor. 4,385,584, Cl. 114-306.000.

Singer Company, The: *See—*
Brienza, Michael J.; and Totino, Peter J., 4,385,573, Cl. 112-158.00E.
Creed, Gerald J.; and Odermann, Charles R., 4,385,574, Cl. 112-184.000.
Graham, Thomas G., 4,385,577, Cl. 112-258.000.
Herr, John A., 4,386,291, Cl. 310-225.000.
Marsh, Walter H. W., 4,385,576, Cl. 112-240.000.

Sittig, Roland: *See—*
Roggwiller, Peter; and Sittig, Roland, 4,386,283, Cl. 307-252.00R.

Skjeldal, Sigve, to Elkem A/S. Method of producing light weight cement for use of cementation of oil and gas wells. 4,385,935, Cl. 106-98.000.

Skopp, Alvin; Ciprios, George; and Batzold, John S., to Exxon Research and Engineering Co. Spontaneous deposition of metals using fuel fed catalytic electrode. 4,385,970, Cl. 204-108.000.

Slager, Richard E., to United States Gypsum Company. Web stiffener for light-gauge metal framing members. 4,385,476, Cl. 52-720.000.

Slater, Billy R., to Foster Wheeler Energy Corporation. Multiplexed touch sensitive screen system. 4,386,232, Cl. 178-18.000.

Slater, Robert E., to Zenith Radio Corporation. Optical mirror adjustment means for a projection television receiver. 4,386,372, Cl. 358-237.000.

Slayton, Richard M.: *See—*
Brown, Paul F., Jr.; Dobek, Louis J.; and Slayton, Richard M., 4,385,788, Cl. 308-187.000.

Smart, Roderick M.: *See—*
Aston, Geoffrey W.; Moles, Frank D.; Smart, Roderick M.; and Tate, Andrew H. J., 4,385,917, Cl. 65-21.300.

Smeenk, Willem J.: *See—*
Van Heteren, Jan; Pronk, Jacobus N.; Smeenk, Willem J.; and Vermaas, Leo F., 4,386,111, Cl. 426-603.000.

Smid, Miles E.; and Branstad, Dennis K. Crytographic key notarization methods and apparatus. 4,386,233, Cl. 178-22.080.

Smith, Eldred T.: *See—*
Gerberich, H. Robert; and Smith, Eldred T., 4,386,014, Cl. 252-443.000.

Smith, Gary L. Kite article carrier. 4,385,740, Cl. 244-155.00R.

Smith, George H.; and Olofson, Peter M., to Minnesota Mining and Manufacturing Company. Visible light sensitive, thermally developable imaging systems. 4,386,154, Cl. 430-336.000.

Smith, Grant M.; Perry, Vinson R.; and Busby, Bruce E., to Sony Corporation. Videotape cue control and display apparatus. 4,386,379, Cl. 360-72.300.

Smith, John L.: *See—*
Ehrsam, William F.; Elander, Robert C.; Matyas, Stephen M.; Meyer, Carl H. W.; Powers, Robert L.; Prentice, Paul N.; Smith, John L.; and Tuchman, Walter L., 4,386,234, Cl. 178-22.090.

SmithKline Beckman Corporation: *See—*
Pfeiffer, Francis R., 4,386,075, Cl. 424-177.000.

Snyder, Keith A.: *See—*
Nair, Krishna K.; and Snyder, Keith A., 4,386,116, Cl. 427-99.000.

Societe Anonyme DBA: *See—*
Couat, Serge, 4,386,247, Cl. 200-61.250.

Societe Anonyme dite: Alsthom-Atlantique: *See—*
Nicoloso, Dante, 4,386,250, Cl. 200-148.00R.
Pham, Quang M., 4,386,299, Cl. 318-261.000.

Societe Industrielle de Decoration et Application "Sida": *See—*
Bennetot, Remy J. P., 4,385,588, Cl. 118-638.000.

Soderberg, John V. System for enhancing airborne safety of airborne vehicles as well as reducing tire wear thereof. 4,385,739, Cl. 244-103.00S.

Solid Fuels, Inc.: *See—*
Voss, George D., 4,385,567, Cl. 110-186.000.

Solt, William E.: *See—*
Bell, Edward A.; and Solt, William E., 4,385,563, Cl. 105-377.000.

Sondey, John M.: *See—*
Woltersdorf, Otto, Jr.; Michelson, Stuart R.; Sondey, John M.; and Schwam, Harvey, 4,386,098, Cl. 424-270.000.

Sony Corporation: *See—*
Guisinger, Barrett E., 4,386,378, Cl. 360-46.000.
Ogawa, Hiroshi, 4,386,300, Cl. 318-314.000.
Shimada, Satoshi, 4,386,364, Cl. 358-66.000.
Smith, Grant M.; Perry, Vinson R.; and Busby, Bruce E., 4,386,379, Cl. 360-72.300.

Sooter, Matthew C., to Conoco Inc. Coal treating process. 4,385,980, Cl. 208-8.0LE.

Sorbe, Gunter: *See—*
Maurer, Alexander; Adrian, Renate; Wasel-Nielen, Horst-Dieter; Sorbe, Gunter; and Kandler, Joachim, 4,386,024, Cl. 252-523.000.

Sorce, Peter S.; and Clifford, Earl W., to Aro Corporation, The. Method and apparatus for measuring the permeability of a material. 4,385,517, Cl. 73-38.000.

Soref, Richard A., to Sperry Corporation. Dual array fiber liquid crystal optical switches. 4,385,799, Cl. 350-96.190.

Sowers, Eugene E., to Dana Corporation. Universal joint housing. 4,385,677, Cl. 180-254.000.

Spacetrekker Products Limited: *See—*
Bobath, Peter L., 4,385,850, Cl. 403-205.000.

Spain, Stanley R.; and Reichard, William G., to Kidde, Inc. Crane boom top plate lateral support. 4,385,704, Cl. 212-269.000.

Spectrolab, Inc.: *See—*
Bartels, Frederick T. C., 4,385,430, Cl. 29-458.000.

Spencer, Lloyd. Irrigation emitter tube. 4,385,727, Cl. 239-107.000.

Sperry Corporation: *See—*
Ehrhart, Philip J.; and Haldeman, Peter P., 4,385,484, Cl. 56-320.100.
Granberg, Mauritz L.; Hanson, David G.; Rajala, Robert L.; and Whipple, William G., 4,386,349, Cl. 340-723.000.
McIlwain, Irwin D., 4,385,483, Cl. 56-228.000.
Minor, Ray C., 4,385,863, Cl. 414-699.000.
Narveson, Parm L.; Clark, Robert W.; and Hannert, Lawrence C., 4,386,345, Cl. 340-703.000.
O'Brien, Steven M., 4,386,401, Cl. 364-200.000.
Soref, Richard A., 4,385,799, Cl. 350-96.190.

Spiralux Limited: *See—*
Avison, Gerald, 4,385,847, Cl. 400-144.200.

Sprecker, Mark A.; and Hall, John B., to International Flavors & Fragrances Inc. Substituted tricyclodecane derivatives, processes for producing same and organoleptic uses thereof. 4,386,023, Cl. 252-522.00R.

Sprenger, Gregory S.: *See—*
Jaisinghani, Rajan A.; and Sprenger, Gregory S., 4,385,986, Cl. 210-123.000.

Sprunck, Emile: *See—*
Leroy, Pierre J.; Deschamps, Maurice; and Sprunck, Emile, 4,385,753, Cl. 266-268.000.

Squires, Steven L.: *See—*
Gulette, Ronald S.; Gavagan, James A.; Petersen, Carl M., III; and Squires, Steven L., 4,385,737, Cl. 242-107.700.

Stacy, Carl J.: *See—*
Macdonell, Gary D.; and Stacy, Carl J., 4,386,185, Cl. 524-566.000.

Stadler, Werner: *See—*
Eheim, Franz; Geiger, Wolfgang; and Stadler, Werner, 4,385,614, Cl. 123-506.000.

Staeubli Ltd.: *See—*
Kleiner, Walter, 4,385,646, Cl. 139-331.000.

Stamicarbon B.V.: *See—*
de Graaf, Theodorus F. M.; and Geersheuvels, Charles H., 4,386,207, Cl. 546-164.000.
Scholten, Joseph J. F.; and vande Leemput, Lambertus J. M. A., 4,386,016, Cl. 252-458.000.

Standard Oil Company (Indiana): *See—*
Jacoby, Philip, 4,386,129, Cl. 428-215.000.
Peterson, Gregory P.; and Hamilton, Alan D., 4,386,166, Cl. 521-99.000.

Stanton, Horace D.: *See—*
Reed, Russell, Jr.; Chan, May L.; and Stanton, Horace D., 4,385,948, Cl. 149-19.500.

Starr Hydraulic-Electro Controls Co.: *See—*
Starr, Louis, 4,385,909, Cl. 55-55.000.

Starr, Louis, to Starr Hydraulic-Electro Controls Co. De-aerator for hydraulic power units. 4,385,909, Cl. 55-55.000.

Starr, Myron C.: *See—*
Loftis, James R.; and Starr, Myron C., 4,385,418, Cl. 16-381.000.

Stauffer Chemical Company: *See—*
Ayen, Richard J., 4,386,228, Cl. 570-243.000.
DiSalvo, Anthony L.; and Tsai, Chung-Chieh, 4,386,191, Cl. 525-504.000.
Fancher, Llewellyn W., 4,385,922, Cl. 71-87.000.
Fancher, Llewellyn W.; Walker, Francis H.; and Buren, Lawrence L., 4,385,923, Cl. 71-87.000.
Walker, Francis H., 4,385,926, Cl. 71-111.000.

Steigerwald, Robert L.: *See—*
Kocher, Mark J.; and Steigerwald, Robert L., 4,386,394, Cl. 363-20.000.

Steiner, Robert E.; and Savla, Chandrakant V., to Emerson Electric Co. Whole house fan. 4,385,550, Cl. 98-43.00R.

Stelzer, Frank. Two-stroke internal combustion engine. 4,385,597, Cl. 123-62.000.

Stening, Goran B.: *See—*
Helgstrand, Ake J. E.; Johansson, Karl N.; Misiorny, Alfons; Noren, Jan O.; and Stening, Goran B., 4,386,081, Cl. 424-212.000.

Stephens, William I., to Knoll International, Inc. Upholstered furniture element. 4,385,783, Cl. 297-455.000.

Sterling, Robert E., to Medical Research Associates, Ltd. Hydrocarbon block copolymer with dispersed polysiloxane. 4,386,179, Cl. 524-269.000.

Stewart, Allan: *See—*
Hogan, Philip J.; Stewart, Allan; and Whittam, Thomas V., 4,386,230, Cl. 585-467.000.

Stewart, David F.: *See—*
Grancio, Michael R.; Stewart, David F.; and Cass, John F., 4,386,187, Cl. 525-96.000.
Grancio, Michael R.; Stewart, David F.; and Cass, John F., 4,386,188, Cl. 525-96.000.

Stewart, Donald L., Jr.: *See—*
Johnson, Roger C.; Stewart, Donald L., Jr.; Tsao, Utah; and Wobleber, David A., 4,385,964, Cl. 203-50.000.

Stewart, Roger G.: *See—*
Wacyk, Ihor T.; and Stewart, Roger G., 4,386,244, Cl. 307-260.000.

Stewen, Wilhelm; and Weskamp, Wilhelm, to Ruhrkohle Aktiengesellschaft. Method for the production of coke. 4,385,962, Cl. 201-6.000.

Sticht, Walter. Control and monitoring arrangement for drives of moving machine parts. 4,385,685, Cl. 198-341.000.

Stihl, Andreas: *See—*
Nitschmann, Karl; and Weidmann, Gunter, 4,385,442, Cl. 30-382.000.

Stocker, Curtis L.: *See*—
Munn, J. Knox; Roberts, Thomas; and Stocker, Curtis L., 4,385,765, Cl. 273-253.000.
Stoll, Brigitte: *See*—
Hilboll, Gerd; Lautenschlager, Hans-Heiner; Stoll, Brigitte; and Probst, Manfred, 4,386,031, Cl. 260-404.000.
Stopinc Aktiengesellschaft: *See*—
Meier, Ernest; and Bachmann, Herbert, 4,385,715, Cl. 222-598.000.
Storandt, Ralf: *See*—
Scheck, Georg; and Storandt, Ralf, 4,385,773, Cl. 280-612.000.
Storz, Karl: *See*—
Hamou, Jacques, 4,385,810, Cl. 350-520.000.
Stradal, Milos, to Reed Ltd. Method and apparatus for preconditioning laminated paper for recycling. 4,385,997, Cl. 210-784.000.
Straith, Richard E. Surgical instrument. 4,385,628, Cl. 128-92.0EA.
Strange, Donald R.: *See*—
Knoll, Glenn F.; Strange, Donald R.; and Bennett, Matthew C., Jr., 4,386,404, Cl. 364-414.000.
Strange, Robert E.; and Morris, Charles F., to Jancy Engineering Co. Arbor for rotary cutting tool. 4,385,853, Cl. 408-68.000.
Straubel, Max; Schwartz, Reinhard; Ritter, Ernst; and Djordjevic, Ilija, to Robert Bosch GmbH. Apparatus for positionally fixing a drive shaft disposed in a fuel injection pump for internal combustion engines. 4,385,867, Cl. 417-63.000.
Studer, Urs P.: *See*—
Mualler, Walter; Studer, Urs P.; and Blobel, Harald, 4,385,541, Cl. 84-1.140.
Studsvik Energiteknik AB: *See*—
Berglund, Nils O. H.; and Olsson, Per A., 4,386,261, Cl. 219-374.000.
Sudarsanam, Vasudevan: *See*—
Rajappa, Srinivasachari; and Sudarsanam, Vasudevan, 4,386,097, Cl. 424-270.000.
Sueishi, Motoharu: *See*—
Yoshida, Shuzo; Matsuoka, Hiroki; Nogami, Susumu; Ono, Hironobu; Sueishi, Motoharu; and Ueda, Kazuo, 4,385,613, Cl. 123-489.000.
Sugasawa, Fukashi; Iizuka, Haruhiko; Etoh, Yukihiro; and Tanaka, Toshiaki, to Nissan Motor Company, Ltd. Split type internal combustion engine. 4,385,600, Cl. 123-198.00F.
Sugihara, Kunihiko: *See*—
Nakajima, Yasuo; Onoda, Michio; and Sugihara, Kunihiko, 4,385,598, Cl. 123-76.000.
Sugimori, Hideo. Electronic cash register. 4,386,265, Cl. 235-3.000.
Sugimoto, Osamu; and Takizawa, Masayoshi, to Kabushiki Kaisha Nippon Coinco. Coin selection device. 4,385,684, Cl. 194-100.00A.
Suh, Kyung W., to Dow Chemical Company, The. Styrenic polymer foams and preparation thereof. 4,386,165, Cl. 521-79.000.
Sully, Lance; and Jackson, Ian T., to J. & P. Coats, Limited. Device and method for use in the treatment of damaged articular surfaces of human joints. 4,385,404, Cl. 3-1.910.
Sulzer Brothers Limited: *See*—
Ziegler, Georg, 4,385,501, Cl. 62-129.000.
Sumikawa, Yasushi; Seitoh, Hisao; and Kuroda, Masahiro, to Bridgestone Tire Company Limited. Two main groove-rib type tread pattern. 4,385,654, Cl. 152-209.00R.
Sumitomo Electric Industries, Ltd.: *See*—
Endoh, Seiji; Tada, Shotaro; Kuga, Toru; Takeda, Yasuo; Mitsui, Kazuo; and Yoshimura, Yoji, 4,385,795, Cl. 339-176.0MF.
Kawada, Shigeo; Akaku, Fumiyoshi; and Yukawa, Seiki, 4,386,278, Cl. 307-9.000.
Yonechi, Shinichi, 4,385,485, Cl. 57-13.000.
Sumitomo Metal Industries Limited: *See*—
Ichidate, Minoru; and Kubo, Toshihiko, 4,385,929, Cl. 75-0.50C.
Sung, Rodney L.: *See*—
Zoleski, Benjamin H.; Sung, Rodney L.; and Cullen, William P., 4,386,001, Cl. 252-32.70E.
Superior Electric Company, The: *See*—
Laurie, William H., 4,386,288, Cl. 310-49.00R.
Surgikos, Inc.: *See*—
Wille, Michael T.; and Sachuk, Nicholas E., 4,385,812, Cl. 350-587.000.
Surtees, Cyril J.: *See*—
Graham, Thomas; Redman, Frank B.; and Surtees, Cyril J., 4,386,171, Cl. 523-337.000.
Sutor, James J.: *See*—
McGill, Charles K.; and Sutor, James J., 4,386,209, Cl. 546-311.000.
Sutphin, Eldon: *See*—
Kalmowitz, Sheldon; Beigel, Regis; Sutphin, Eldon; and McGhee, Charles, 4,386,275, Cl. 250-342.000.
Suyderhoud, Henri G.: *See*—
Virupaksha, Krishnamoorthy; and Suyderhoud, Henri G., 4,386,237, Cl. 179-15.55R.
Suzuki, Hitoshi: *See*—
Ohgami, Masaaki; Yasuda, Hiroki; and Suzuki, Hitoshi, 4,385,608, Cl. 123-440.000.
Suzuki, Ikuo: *See*—
Tomita, Tamaki; Suzuki, Ikuo; Imai, Tomoyasu; and Kitajima, Masato, 4,385,907, Cl. 51-296.000.
Suzuki, Kazumasa: *See*—
Shimizu, Junichi; Suzuki, Kazumasa; and Nakajima, Yoshikazu, 4,386,158, Cl. 435-97.000.
Suzuki, Masao. Machine for cutting scrapped goods. 4,385,556, Cl. 100-98.00R.
Suzuki, Mitsuo: *See*—
Matsuoka, Shigeru; Tokunaga, Takeshi; Yosekura, Seiji; Yamauchi, Koji; and Suzuki, Mitsuo, 4,386,398, Cl. 364-167.000.
Suzuki, Sadao: *See*—
Yoshino, Yataro; Suzuki, Sadao; and Takada, Takuzo, 4,386,046, Cl. 264-296.000.
Svending, Per J.; Batelson, Per G.; Johansson, Hans E.; and Larsson, Hans M., to EKA Aktiebolag. Papermaking. 4,385,961, Cl. 162-175.000.
Swanson, Sally A.: *See*—
Wingard, Robert E., Jr.; and Swanson, Sally A., 4,386,206, Cl. 546-76.000.
Swartz, George A., to RCA Corporation. Electrolytic etch for eliminating shorts and shunts in large area amorphous silicon solar cells. 4,385,971, Cl. 204-129.100.
Swartz, Robert G.: *See*—
Finegan, Sean N.; McFee, James H.; Swartz, Robert G.; and Voshchenkov, Alexander M., 4,385,946, Cl. 148-175.000.
Swearingen, Judson S., to Rotoflow Corporation, Inc. Shaft mounting device and method. 4,385,768, Cl. 277-1.000.
Sweetheart Plastics, Inc.: *See*—
Grancio, Michael R.; Stewart, David F.; and Cass, John F., 4,386,187, Cl. 525-96.000.
Grancio, Michael R.; Stewart, David F.; and Cass, John F., 4,386,188, Cl. 525-96.000.
Sylla, Jurgen; and Muller, Hermann, to Agfa-Gevaert AG. Slide projector. 4,385,815, Cl. 353-104.000.
Szabo, Miklos; and Weiperth, Vilmos. Apparatus for and method of spreading gaseous, liquid and powdered materials. 4,385,714, Cl. 222-80.000.
Szirtes, Tamas: *See*—
Kisfaludy, Lajos; Szirtes, Tamas; Balaspiri, Lajos; Palosi, Eva; Szporny, Laszlo; and Sarkadi, Adam, 4,386,073, Cl. 424-177.000.
Szporny, Laszlo: *See*—
Kisfaludy, Lajos; Szirtes, Tamas; Balaspiri, Lajos; Palosi, Eva; Szporny, Laszlo; and Sarkadi, Adam, 4,386,073, Cl. 424-177.000.
Szycher, Michael, to Thermo Electron Corporation. Process for forming an optically clear polyurethane lens or cornea. 4,386,039, Cl. 264-1.100.
Tachikawa, Kyoji; Asano, Toshihisa; and Takeuchi, Takao, to National Research Institute for Metals. Method for producing Nb_3Sn superconductors. 4,385,942, Cl. 148-11.50Q.
Tada, Shotaro: *See*—
Endoh, Seiji; Tada, Shotaro; Kuga, Toru; Takeda, Yasuo; Mitsui, Kazuo; and Yoshimura, Yoji, 4,385,795, Cl. 339-176.0MF.
Takada, Takuzo: *See*—
Yoshino, Yataro; Suzuki, Sadao; and Takada, Takuzo, 4,386,046, Cl. 264-296.000.
Takagi, Sadaaki. Method for the manufacture of a cushioning material which comprises compressing synthetic filaments, applying adhesive and heating, and pressing the resultant material in the presence of steam. 4,386,041, Cl. 264-128.000.
Takahara, Yoshimasa: *See*—
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Kuwana, Noriaki; Abe, Shinya; and Yamada, Kouzi, 4,386,227, Cl. 568-875.000.
Takahashi, Hideo; Igi, Keishiro; Ogawara, Hisashi; and Nakayasu, Haruo, to Kuraray Company, Ltd. Method of manufacturing foundry sand molds. 4,385,656, Cl. 164-525.000.
Takahashi, Minoru: *See*—
Seimiya, Ryubun; Yamada, Yutaka; Tomono, Makoto; Tarumi, Noriyoshi; Fujisaki, Yasuyuki; Takahashi, Minoru; Ogawara, Hiroshi; and Funaki, Hirozo, 4,386,147, Cl. 430-99.000.
Takahashi, Yasuhiro; and Ohinata, Yoshiharu, to Riso Kagaku Corporation. Ink amount detecting device. 4,385,558, Cl. 101-120.000.
Takahata, Kei: *See*—
Kishino, Shigeru; Yasui, Shigeo; Takahata, Kei; and Ohkawa, Masakuni, 4,386,146, Cl. 430-95.000.
Takayama, Atsushi: *See*—
Ihara, Keisuke; Takayama, Atsushi; Tanioka, Susumu; Toda, Kazuo; Sasaki, Akiyosi; and Hoshino, Shoji, 4,385,553, Cl. 99-510.000.
Takeda, Yasuo: *See*—
Endoh, Seiji; Tada, Shotaro; Kuga, Toru; Takeda, Yasuo; Mitsui, Kazuo; and Yoshimura, Yoji, 4,385,795, Cl. 339-176.0MF.
Takei, Toshihiro: *See*—
Shimogawa, Toshiaki; Kuwakado, Satosi; Tsuge, Noboru; and Takei, Toshihiro, 4,385,775, Cl. 280-806.000.
Takematsu, Tetsuo; Hoya, Masaaki; and Kaneshiki, Toshitaka, to Hodogaya Chemical Co., Ltd. Benzamide derivatives and herbicidal composition containing the same. 4,385,927, Cl. 71-118.000.
Takemura, Yasuhiko: *See*—
Kotani, Teizo; Enyo, Hiroji; Tanaka, Minoru; Takemura, Yasuhiko; and Miyabayashi, Toshio, 4,386,181, Cl. 524-304.000.
Takeshima, Kiyoshi, to Yoshida Kogyo K. K. Method of and apparatus for molding a continuous thermoplastic coupling element strip for slide fasteners. 4,386,043, Cl. 264-167.000.
Takeuchi, Makoto; Yoshida, Ekuo; and Kohno, Masahiro, to JEOL Ltd. Spin immunoassay apparatus. 4,386,054, Cl. 422-63.000.
Takeuchi, Takao: *See*—
Tachikawa, Kyoji; Asano, Toshihisa; and Takeuchi, Takao, 4,385,942, Cl. 148-11.50Q.
Takeuchi, Tomio: *See*—
Oki, Toshikazu; Yoshimoto, Akihiro; Kouno, Kageaki; Inui, Taiji; Takeuchi, Tomio; and Umezawa, Hamao, 4,386,198, Cl. 536-6.400.

Takimoto, Hiroyuki; and Ushiro, Tatsuzo, to Canon Kabushiki Kaisha. Video camera. 4,386,376, Cl. 358-335.000.
Takizawa, Masayoshi: *See*—
Sugimoto, Osamu; and Takizawa, Masayoshi, 4,385,684, Cl. 194-100.00A.
Taliste, Arvo: *See*—
Bertellotti, Antano; and Taliste, Arvo, 4,385,438, Cl. 29-764.000.
Tamamura, Junichi: *See*—
Aoki, Shigeo; Isogami, Shuzo; Tamamura, Junichi; Nagayoshi, Tatsuo; Yasui, Masaru; and Hirao, Susumu, 4,385,473, Cl. 51-281.00R.
Tamura, Takeo; and Yamabe, Taiji, to Nissan Motor Company, Limited. Mirror using transparent synthetic resin plate. 4,385,804, Cl. 350-310.000.
Tanabe, Norihiko. Injection molding apparatus. 4,385,877, Cl. 425-3.000.
Tanaka, Hideki: *See*—
Kobayashi, Kazuo; Tanaka, Hideki; Iida, Katsuyoshi; and Kamite, Junji, 4,385,616, Cl. 123-571.000.
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Tanaka, Masaru: *See*—
Iwata, Shouji; Tanaka, Masaru; Yamashita, Fumio; Kurobe, Hideharu; and Itani, Takuo, 4,385,486, Cl. 57-58.520.
Tanaka, Minoru; and Yagi, Kenkichi, to Toray Industries, Inc. Dense, elegant and pliable sheet material comprising fibrous base impregnated with a diol-hindered amine polyurethane system. 4,386,127, Cl. 428-91.000.
Tanaka, Minoru: *See*—
Itoh, Masanori; and Tanaka, Minoru, 4,386,297, Cl. 315-169.400.
Kotani, Teizo; Enyo, Hiroji; Tanaka, Minoru; Takemura, Yasuhiko; and Miyabayashi, Toshio, 4,386,181, Cl. 524-304.000.
Tanaka, Seiichi: *See*—
Ejiri, Takeshi; Tanaka, Seiichi; Kasai, Teruaki; Komatsuzaki, Masao; and Masuda, Satoru, 4,385,529, Cl. 74-535.000.
Tanaka, Toshiaki: *See*—
Sugasawa, Fukashi; Iizuka, Haruhiko; Etoh, Yukihiro; and Tanaka, Toshiaki, 4,385,600, Cl. 123-198.00F.
Tanei, Hirayoshi; Ikegami, Akira; Arima, Hideo; Isogai, Tokio; and Kawabata, Kiyoshi, to Hitachi Chemical Company, Ltd. Low temperature sintering porcelain composition. 4,386,387, Cl. 361-321.000.
Tanigawa, Koichi: *See*—
Nakahata, Kimio; Tanigawa, Koichi; Adachi, Hiroyuki; and Watanabe, Tsuyoshi, 4,385,829, Cl. 355-3.0DD.
Tanimoto, Akikazu: *See*—
Nakazawa, Kiwao; and Tanimoto, Akikazu, 4,385,838, Cl. 356-399.000.
Tanioka, Susumu: *See*—
Ihara, Keisuke; Takayama, Atsushi; Tanioka, Susumu; Toda, Kazuo; Sasaki, Akiyosi; and Hoshino, Shoji, 4,385,553, Cl. 99-510.000.
Tantera, Inc.: *See*—
Clark, Frank, 4,385,411, Cl. 15-160.000.
Tarumi, Noriyoshi: *See*—
Seimiya, Ryubun; Yamada, Yutaka; Tomono, Makoto; Tarumi, Noriyoshi; Fujisaki, Yasuyuki; Takahashi, Minoru; Ogawara, Hiroshi; and Funaki, Hirozo, 4,386,147, Cl. 430-99.000.
Tate, Andrew H. J.: *See*—
Aston, Geoffrey W.; Moles, Frank D.; Smart, Roderick M.; and Tate, Andrew H. J., 4,385,917, Cl. 65-21.300.
Tatebayashi, Akinori. Molding of synthetic resin article having a hard coating. 4,386,042, Cl. 264-135.000.
Tateno, Hidenori: *See*—
Itou, Hiroshi; Watanabe, Haruo; Tateno, Hidenori; and Kobashi, Mamoru, 4,385,602, Cl. 123-339.000.
Tateno, Sinjitsu. Method and apparatus for producing an ionized gas by radiation. 4,386,276, Cl. 250-436.000.
Tazzia, Edward K.: *See*—
McGinley, Charles M.; Schamber, Arlen R.; Melin, Denny L.; Christensen, Ronald L.; Tazzia, Edward K.; Hackbarth, Richard W.; Fogarty, Terry M.; and Faint, Richard C., 4,385,987, Cl. 210-150.000.
TDK Electronics Co., Ltd.: *See*—
Shiba, Haruo, 4,385,734, Cl. 242-68.500.
Tecnol, Inc.: *See*—
Hubbard, Vance M.; and Brunson, Welton K., 4,385,950, Cl. 156-73.100.
Tedder, Joseph A., to Combustion Engineering, Inc. Welded seal removal. 4,385,535, Cl. 82-4.00R.
Teich, Wesley W.: *See*—
Bowen, Robert F.; Freedman, George; and Teich, Wesley W., 4,386,109, Cl. 426-241.000.
Teinturier, Pierre L. Hip prosthesis and its method of fitting. 4,385,405, Cl. 3-1.912.
Tektronix, Inc.: *See*—
Peterson, James R.; and Doornink, Douglas J., 4,386,367, Cl. 358-140.000.
Telecommunications Radioelectriques et Telephoniques T.R.T.: *See*—
Ferrieu, Gilbert M. M.; Lefort, Emmanuel; and Moliere, Francoise, 4,386,236, Cl. 179-1.0VL.
Temple, Davis L., Jr.; and Lobeck, Walter G., Jr., to Mead Johnson & Company. 2-Phenoxyalkyl-1,2,4-triazol-3-one antidepressants. 4,386,091, Cl. 424-250.000.
Terada, Takashi: *See*—
Sato, Fumihiro; Iwasaki, Masayuki; Terada, Takashi; Ninomiya, Hiroshi; and Nakada, Minoru, 4,386,120, Cl. 427-213.000.
Teroson G.m.b.H.: *See*—
Reich, Karl; and Tomaschek, Heinz A., 4,386,193, Cl. 526-298.000.
Terry, Michael B., to Mostek Corporation. Circuit for detecting loss of supply voltage. 4,386,281, Cl. 307-200.00B.
Terumo Corporation: *See*—
Motobayashi, Hiroshi, 4,386,053, Cl. 422-56.000.
Teutsch, Jean G.; Costerousse, Germain; Philibert, Daniel; and Deraedt, Roger, to Roussel Uclaf. Novel steroids. 4,386,085, Cl. 424-238.000.
Texaco Development Corporation: *See*—
Estabrook, Lawrence E., 4,385,906, Cl. 48-197.00R.
Texaco Inc.: *See*—
Sawicki, Robert A.; and Kaufman, Benjamin J., 4,385,904, Cl. 44-56.000.
Zoleski, Benjamin H.; Sung, Rodney L.; and Cullen, William P., 4,386,001, Cl. 252-32.70E.
Texas Instruments Incorporated: *See*—
Kuo, Chang-Kiang; and Tsaur, Shyh-Chang, 4,385,432, Cl. 29-571.000.
Kuo, Chang-Kiang, 4,386,286, Cl. 307-581.000.
Pandya, Yogendra C.; and Wood, Paul B., 4,386,410, Cl. 364-518.000.
Theobald, Hans; Wuerzer, Bruno; and Kiehs, Karl, to BASF Aktiengesellschaft. 1,2-Oxazolyl alkyl carbamates, and their use as herbicides. 4,385,924, Cl. 71-88.000.
Thermo Electron Corporation: *See*—
Szycher, Michael, 4,386,039, Cl. 264-1.100.
Thomas, Jean; Laneres, Jacques; and Leonard, Jean P., to Institut Textile de France. Process and apparatus for reducing the amount of liquid from a porous material by means of superheated steam from said liquid. 4,385,450, Cl. 34-21.000.
Thompson, Paige W.: *See*—
Denny, Dann W.; Hilty, Ronald L.; and Thompson, Paige W., 4,385,502, Cl. 62-155.000.
Thomson-CSF: *See*—
Perbet, Jean-Noel; Hareng, Michel; and Le Berre, Serge, 4,385,807, Cl. 350-350.00S.
Tidwell, Joe D. Fireplace liner incorporating thermal expansion stress relief spacers. 4,385,622, Cl. 126-120.000.
Tillen, Keith G.: *See*—
Hewitt, Frank A.; and Tillen, Keith G., 4,385,914, Cl. 62-536.000.
Timex Corporation: *See*—
Eberhardt, Noel; and Carl, Stewart, 4,386,254, Cl. 200-339.000.
Lowdenslager, John R., 4,386,351, Cl. 340-768.000.
Wiesner, Leo, 4,385,842, Cl. 368-242.000.
Tisdale, Norman F., Jr. Method and apparatus for producing ingot mold caps. 4,385,655, Cl. 164-112.000.
Titus, Theodore, IV: *See*—
Cutler, Timothy D.; and Titus, Theodore, IV, 4,386,382, Cl. 360-92.000.
Toda, Kazuo: *See*—
Ihara, Keisuke; Takayama, Atsushi; Tanioka, Susumu; Toda, Kazuo; Sasaki, Akiyosi; and Hoshino, Shoji, 4,385,553, Cl. 99-510.000.
Todd, John M. Liquid level sensor. 4,386,337, Cl. 340-59.000.
Tokai Electric Wire Company, Limited: *See*—
Kawada, Shigeo; Akaku, Fumiyoshi; and Yukawa, Seiki, 4,386,278, Cl. 307-9.000.
Tokarz, Richard D., to United States of America, Energy. Water level sensor and temperature profile detector. 4,385,519, Cl. 73-295.000.
Tokarz, Richard D., to United States of America, Energy. High temperature measuring device. 4,386,049, Cl. 376-247.000.
Tokunaga, Takeshi: *See*—
Matsuoka, Shigeru; Tokunaga, Takeshi; Yonekura, Seiji; Yamauchi, Koji; and Suzuki, Mitsuo, 4,386,398, Cl. 364-167.000.
Tokusen Kogyo Kabushiki Kaisha: *See*—
Iwata, Shouji; Tanaka, Masaru; Yamashita, Fumio; Kurobe, Hideharu; and Itani, Takuo, 4,385,486, Cl. 57-58.520.
Tokyo Electric Co., Ltd.: *See*—
Ihara, Keisuke; Takayama, Atsushi; Tanioka, Susumu; Toda, Kazuo; Sasaki, Akiyosi; and Hoshino, Shoji, 4,385,553, Cl. 99-510.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Inomata, Koichiro; Hasegawa, Michio; Shimanuki, Senji; and Haga, Masakatsu, 4,385,932, Cl. 75-123.00B.
Itai, Humio, 4,386,381, Cl. 360-74.200.
Kanazawa, Takaki, 4,385,875, Cl. 418-63.000.
Kimoto, Katsumi, 4,386,374, Cl. 358-302.000.
Nakamura, Yashushi; Ohtombe, Ko; and Izawa, Kouji, 4,386,432, Cl. 382-7.000.
Ochiai, Toshihiko; Nakamura, Kiyoshi; Nishida, Katsutoshi; and Sakai, Masato, 4,385,866, Cl. 416-241.00B.
Ogawa, Atsushi, 4,386,327, Cl. 331-108.00D.
Ohmura, Yamichi, 4,385,937, Cl. 148-1.500.
Ozawa, Osamu, 4,385,433, Cl. 29-576.00B.
Umezu, Kenji; Watanabe, Masakichi; Nakada, Minoru; and Hitosugi, Toshiaki, 4,385,505, Cl. 62-285.000.
Tomaschek, Heinz A.: *See*—
Reich, Karl; and Tomaschek, Heinz A., 4,386,193, Cl. 526-298.000.
Tomita, Tamaki; Suzuki, Ikuo; Imai, Tomoyasu; and Kitajima, Masato, to Toyoda Koki Kabushiki Kaisha. Resinoid bonded grinding wheel with support member made of a heat insulating material. 4,385,907, Cl. 51-296.000.

Tomlin, Jerry B.; and Hodgeman, Herbert H., to Daniel Industries, Inc. Four-way plug valve. 4,385,746, Cl. 251-56.000.

Tomono, Makoto: *See*—
Seimiya, Ryubun; Yamada, Yutaka; Tomono, Makoto; Tarumi, Noriyoshi; Fujisaki, Yasuyuki; Takahashi, Minoru; Ogawara, Hiroshi; and Funaki, Hirozo, 4,386,147, Cl. 430-99.000.

Toray Industries, Inc.: *See*—
Hayashi, Kenji; Kobayashi, Shoji; and Ohshima, Keisuke, 4,386,130, Cl. 428-215.000.
Tanaka, Minoru; and Yagi, Kenkichi, 4,386,127, Cl. 428-91.000.

Torrington Company Limited, The: *See*—
Bait, Robert S., 4,385,789, Cl. 308-187.100.

Toshimitu, Manabu, to Pioneer Electronic Corporation. Brushless dc motor control circuit. 4,386,298, Cl. 318-254.000.

Totino, Peter J.: *See*—
Brienza, Michael J.; and Totino, Peter J., 4,385,573, Cl. 112-158.00E.

Toy, Wing N., to Bell Telephone Laboratories, Incorporated. Computer with dual vat buffers for accessing a common memory shared by a cache and a processor interrupt stack. 4,386,402, Cl. 364-200.000.

Toyo Kogyo Co., Ltd.: *See*—
Honiden, Yoshinori; and Okazaki, Katsumi, 4,385,607, Cl. 123-425.000.
Kobayashi, Kazuo; Tanaka, Hideki; Iida, Katsuyoshi; and Kamite, Junji, 4,385,616, Cl. 123-571.000.

Toyo Rubber Industry Co., Ltd.: *See*—
Okazaki, Takuya; Asada, Toyohiko; Nishihata, Masahide; Morishita, Yukitoshi; and Oda, Keijiro, 4,385,653, Cl. 152-209.00R.

Toyo Seikan Kaisha, Ltd.: *See*—
Ashina, Masato, 4,385,699, Cl. 209-538.000.

Toyoda, Kenji; Araki, Yoshitaka; and Watanabe, Sakuji, to Nippon Kogaku K.K. Display device in automatic exposure control camera. 4,385,819, Cl. 354-36.000.

Toyoda Koki Kabushiki Kaisha: *See*—
Nishimura, Hideo; and Enomoto, Minoru, 4,386,306, Cl. 318-571.000.
Tomita, Tamaki; Suzuki, Ikuo; Imai, Tomoyasu; and Kitajima, Masato, 4,385,907, Cl. 51-296.000.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Hattori, Tadashi; Goto, Kenji; Sawada, Daisaku; Shigematu, Takashi; Yamaguchi, Hiroaki; and Nishida, Minoru, 4,385,606, Cl. 123-416.000.
Itou, Hiroshi; Watanabe, Haruo; Tateno, Hidenori; and Kobashi, Mamoru, 4,385,602, Cl. 123-339.000.
Sakurai, Kazuhiro; Sawada, Hiroshi; and Hattori, Kyo, 4,385,491, Cl. 60-276.000.
Yoshida, Shuzo; Matsuoka, Hiroki; Nogami, Susumu; Ono, Hironobu; Sueishi, Motoharu; and Ueda, Kazuo, 4,385,613, Cl. 123-489.000.

Treiber, Robert, to International Telephone and Telegraph Corporation. Automatic equalizer for synthesizing recursive filters. 4,386,430, Cl. 375-14.000.

Treuner, Uwe D.; and Breuer, Hermann, to E. R. Squibb & Sons, Inc. Cephalosporins having an imino substituted piperazindioncarbonylamino acyl sidechain. 4,386,199, Cl. 542-420.000.

Tricoles, Gus P.; and Rope, Eugene L., to General Dynamics/Electronics Division. Antenna system employing a self-referencing microwave interferometer for direction finding. 4,386,356, Cl. 343-113.00R.

Trio Kabushiki Kaisha: *See*—
Naito, Michinori, 4,386,235, Cl. 179-1.0GE.

TRW Inc.: *See*—
Kortovich, Charles S., Jr.; and Guenin, Bruce M., 4,385,939, Cl. 148-2.000.

Tsai, Chung-Chieh: *See*—
DiSalvo, Anthony L.; and Tsai, Chung-Chieh, 4,386,191, Cl. 525-504.000.

Tsao, Utah: *See*—
Johnson, Roger C.; Stewart, Donald L., Jr.; Tsao, Utah; and Wohleber, David A., 4,385,964, Cl. 203-50.000.

Tsaur, Shyh-Chang: *See*—
Kuo, Chang-Kiang; and Tsaur, Shyh-Chang, 4,385,432, Cl. 29-571.000.

Tsuda, Koichi: *See*—
Nagasawa, Ikuo; Mukae, Kazuo; Tsuda, Koichi; Ishii, Takashi; and Sakaguchi, Toyoshige, 4,386,022, Cl. 252-521.000.

Tsuge, Noboru: *See*—
Shimogawa, Toshiaki; Kuwakado, Satosi; Tsuge, Noboru; and Takei, Toshihiro, 4,385,775, Cl. 280-806.000.

Tuchman, Walter L.: *See*—
Ehrsam, William F.; Elander, Robert C.; Matyas, Stephen M.; Meyer, Carl H. W.; Powers, Robert L.; Prentice, Paul N.; Smith, John L.; and Tuchman, Walter L., 4,386,234, Cl. 178-22.090.

Tucker, Gordon H., to Everett Metal Products, Inc. System and method for gasification of solid carbonaceous fuels. 4,385,905, Cl. 48-62.00R.

Turbo Resources Ltd.: *See*—
Becker, Floyd W.; and Asak, Kare, 4,385,668, Cl. 175-135.000.

Turechek, William W.: *See*—
Cope, Bernard; Lynch, Kenneth R.; O'Donnell, Daniel H.; Rodell, John T.; Turechek, William W.; and Unterberger, Robert M., 4,386,400, Cl. 364-200.000.

Turner, John C.; Dovey, Anthony; and MacGilp, Neil A., to Procter & Gamble Company, The. Fabric softening composition. 4,386,000, Cl. 252-8.800.

Turner, Patricia K. Article for making a sun visor and fan. 4,386,126, Cl. 428-43.000.

Ueda, Kazuo: *See*—
Yoshida, Shuzo; Matsuoka, Hiroki; Nogami, Susumu; Ono, Hironobu; Sueishi, Motoharu; and Ueda, Kazuo, 4,385,613, Cl. 123-489.000.

Uede, Hisashi: *See*—
Nonomura, Heisaku; Shimizu, Keiichiro; Kishi, Kohei; and Uede, Hisashi, 4,386,352, Cl. 340-784.000.

Uehori, Yuji: *See*—
Matsumoto, Hiromi; Uehori, Yuji; Kajihara, Tetsuo; and Nakano, Tsuneo, 4,385,512, Cl. 72-234.000.

Ueki, Yoshiharu, to Pioneer Electronic Corporation. Tape player control device. 4,386,380, Cl. 360-74.100.

Uffelman, Malcolm R. System for the detection of the presence of a predetermined chemical vapor distributed in the atmosphere. 4,385,516, Cl. 73-24.000.

Ulmer, Wolfgang; and Peterknecht, Klaus, to Siemens Aktiengesellschaft. Space diversity receiver with means for combining signals from the two channels. 4,386,435, Cl. 455-139.000.

Umezawa, Hamao: *See*—
Oki, Toshikazu; Yoshimoto, Akihiro; Kouno, Kageaki; Inui, Taiji; Takeuchi, Tomio; and Umezawa, Hamao, 4,386,198, Cl. 536-6.400.

Umezu, Kenji; Watanabe, Masakichi; Nakada, Minoru; and Hitosugi, Toshiaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Air conditioner. 4,385,505, Cl. 62-285.000.

Ung, Vincent: *See*—
Vignes, Jean P.; and Ung, Vincent, 4,386,413, Cl. 364-748.000.

Union Carbide Corporation: *See*—
Manning, David T.; and Durden, John A., 4,386,086, Cl. 424-244.000.
Maresca, Louis M.; and Matzner, Markus, 4,386,186, Cl. 525-68.000.
Wilson, Stephen T.; Lok, Brent M.; and Flanigen, Edith M., 4,385,994, Cl. 210-689.000.

Union Oil Company of California: *See*—
Hass, Robert H., 4,386,058, Cl. 423-235.000.

United Kingdom Atomic Energy Authority: *See*—
Rosevear, Alan; and Mattock, Patrick, 4,385,991, Cl. 210-635.000.

United States Gypsum Company: *See*—
Lat, Geronimo E.; and Sheppard, Thomas F., 4,386,180, Cl. 524-272.000.
Slager, Richard E., 4,385,476, Cl. 52-720.000.

United States of America
Agriculture: *See*—
Lenker, Don H.; and Nascimento, Dennis F., 4,385,702, Cl. 209-629.000.
Air Force: *See*—
Park, Yoon S.; and Yeo, Yung K., 4,385,938, Cl. 148-1.500.
Army: *See*—
Madderra, Jimmy M., 4,385,561, Cl. 102-523.000.
Energy: *See*—
Dobbins, Michael S.; and Murtha, Marlyn J., 4,386,057, Cl. 423-138.000.
Feder, Harold M.; and Chen, Michael J., 4,386,009, Cl. 252-428.000.
Fox, Ronald L., 4,385,661, Cl. 166-59.000.
Hovis, Victor M., Jr.; Pullen, William C.; Kollie, Thomas G.; and Bell, Richard T., 4,385,943, Cl. 148-31.500.
Kaun, Thomas D.; and Kilsdonk, Dennis J., 4,386,019, Cl. 252-503.000.
Tokarz, Richard D., 4,385,519, Cl. 73-295.000.
Tokarz, Richard D., 4,386,049, Cl. 376-247.000.
Health and Human Services: *See*—
Chiang, Peter K.; Cantoni, Giulio L.; and Montgomery, John A., 4,386,093, Cl. 424-256.000.
Interior: *See*—
Schiller, Joseph E.; and Khalafalla, Sanaa E., 4,385,998, Cl. 210-807.000.
National Aeronautics and Space Administration; administrator; with respect to an invention of:
Nishioka, Kenji; Nibley, David A.; Jeffers, Eldon L.; and Brooks, Richard L. Method for detecting coliform organisms. 4,386,157, Cl. 435-39.000.
National Aeronautics and Space Administration: *See*—
Fontes, Manuel J., 4,385,949, Cl. 156-59.000.
Navy: *See*—
Mittleman, John, 4,385,522, Cl. 73-632.000.
Reed, Russell, Jr.; Chan, May L.; and Stanton, Horace D., 4,385,948, Cl. 149-19.500.
Savage, Donald J., 4,386,321, Cl. 328-25.000.

U.S. Philips Corporation: *See*—
Dubois, Jean-Claude; and Mourgues, Gerard, 4,385,797, Cl. 350-96.200.
Glasbergen, Johannes W., 4,386,325, Cl. 330-288.000.
Harms, Margret; and Luthje, Holger, 4,386,114, Cl. 427-47.000.
Jansen, Gerardus L. M., 4,386,323, Cl. 328-63.000.
Jochem, Cornelis M. G.; and Severin, Petrus J. W., 4,385,916, Cl. 65-3.130.
Klomp, Franciscus M., 4,385,694, Cl. 206-418.000.
Kock, Hendrikus G., 4,386,268, Cl. 250-227.000.
Wesley, Victor J., 4,385,451, Cl. 34-53.000.

United Technologies Corporation: *See*—
Brennan, John J., 4,386,257, Cl. 219-121.0EH.
Brown, Paul F., Jr.; Dobek, Louis J.; and Slayton, Richard M., 4,385,788, Cl. 308-187.000.
Eaton, Harry E.; and Novak, Richard C., 4,386,112, Cl. 427-34.000.

Loftis, James R.; and Starr, Myron C., 4,385,418, Cl. 16-381.000.
Saunders, Hollis S.; Carmer, Richard V.; and Payette, Lionel J., 4,385,435, Cl. 29-596.000.
Saunders, Hollis S.; Carmer, Richard V.; and Payette, Lionel J., 4,385,436, Cl. 29-596.000.
Saunders, Hollis S.; Carmer, Richard V.; and Payette, Lionel J., 4,385,437, Cl. 29-596.000.

Universal Maschinenfabrik Dr. Schieber GmbH: *See*—
Schimko, Reinhold, 4,385,508, Cl. 66-157.000.

University of Arizona Foundation: *See*—
Bowen, Theodore, 4,385,634, Cl. 128-653.000.

University of Minnesota, The Regents of the: *See*—
Case, Steven K., 4,386,414, Cl. 364-826.000.

Unterberger, Robert M.: *See*—
Cope, Bernard; Lynch, Kenneth R.; O'Donnell, Daniel H.; Rodell, John T.; Turechek, William W.; and Unterberger, Robert M., 4,386,400, Cl. 364-200.000.

UOP Inc.: *See*—
Kulprathipanja, Santi; and Neuzil, Richard W., 4,386,012, Cl. 252-430.000.
Neuzil, Richard W., 4,386,225, Cl. 568-758.000.
Roberts, John T., 4,386,002, Cl. 252-47.500.

Upjohn Company, The: *See*—
Lahti, Robert A., 4,386,079, Cl. 424-200.000.

Urban, Ted F.; and Willeford, Michael J., to Lamico, Inc. Shipping package for crutches. 4,385,697, Cl. 206-497.000.

Ushiro, Tatsuzo: *See*—
Takimoto, Hiroyuki; and Ushiro, Tatsuzo, 4,386,376, Cl. 358-335.000.

Uthmann, Ulrich. Catheter. 4,385,631, Cl. 604-284.000.

Vaidya, Waman: *See*—
Ehrlich, Karl; Vaidya, Waman; and Schafer, Ludwig, 4,385,933, Cl. 75-124.00C.

Vaisanen, Voitto, to Asko Oy. Method and apparatus for manufacturing the socket portion of a plastic pipe. 4,386,045, Cl. 264-249.000.

Vale, Wylie W., Jr.; and Rivier, Jean E. F., to Salk Institute for Biological Studies, The. LRF Antagonists. 4,386,074, Cl. 424-177.000.

vande Leemput, Lambertus J. M. A.: *See*—
Scholten, Joseph J. F.; and vande Leemput, Lambertus J. M. A., 4,386,016, Cl. 252-458.000.

van der Linden, Gerardus A.C. Method and a device for repairing the tap hole of a steel converter. 4,385,749, Cl. 266-45.000.

Vanderpool, Clarence D., to GTE Products Corporation. Electrolytic disintegration of sintered metal carbides. 4,385,972, Cl. 204-146.000.

Vanderwerf, Dennis F., to Minnesota Mining and Manufacturing Company. Point focus refracting radiation concentrator. 4,385,808, Cl. 350-452.000.

Van Heteren, Jan; Pronk, Jacobus N.; Smeenk, Willem J.; and Vermaas, Leo F., to Lever Brothers Company. Fat blend. 4,386,111, Cl. 426-603.000.

Van Landeghem, Willy K.; De Maayer, Petrus J.; Loots, Francois P.; Pattyn, Hendrik A.; Bauer, Walter; Farber, Heinrich; Muller, Jurgen; and Schmidt, Manfred, to Agfa-Gevaert AG. X-Ray film cassette. 4,386,431, Cl. 378-187.000.

Varian Associates, Inc.: *See*—
Pierce, Danny A.; Heisler, Joseph A.; and Self, Roger D., 4,385,979, Cl. 204-298.000.

Veb Kombinat Polygraph "Werner Lamberz" Leipzig: *See*—
Johne, Hans; Jentzsch, Arndt; Muller, Wolfgang; Forster, Karl-Heinz; and Schuck, Helmut, 4,385,560, Cl. 101-365.000.

Veb Werkzeugmaschinenkombinat "7.Oktober" Berlin: *See*—
Papistok, Heinz; and Reuter, Herbert, 4,385,855, Cl. 409-24.000.

Vecchiatto, Charles L. Electronic edge and center locator and method of using same. 4,386,344, Cl. 340-680.000.

Veerkamp, Bernard H., to Hosiery Corporation of America, Inc. Folding and packing machine for pantyhose. 4,385,478, Cl. 53-118.000.

Veis, Anatoly I.: *See*—
Daiker, Artur L.; Veis, Anatoly I.; Bogatyrev, Anatoly D.; Kochengin, Evgeny Y.; Palko, Viktor N.; Novoselov, Nikolai M.; Volchematiev, Jury V.; and Morozov, Gennady Y., 4,385,941, Cl. 148-9.500.

Venaas, Norman B.; and Becker, Dale F., to Sangamo Weston, Inc. Electricity theft preventing meter. 4,386,313, Cl. 324-110.000.

Vermaas, Leo F.: *See*—
Van Heteren, Jan; Pronk, Jacobus N.; Smeenk, Willem J.; and Vermaas, Leo F., 4,386,111, Cl. 426-603.000.

Vermilye, Michael L., to Boeing Company, The. Over-center latching coupling. 4,385,423, Cl. 24-71.00T.

Victor F. Weaver, Inc.: *See*—
Martin, Eugene G., 4,385,421, Cl. 17-52.000.

Vignes, Jean P.; and Ung, Vincent, to Agence Nationale de Valorisation de la Recherche (ANVAR). Method and apparatus of providing a result of a numerical calculation with the number of exact significant figures. 4,386,413, Cl. 364-748.000.

Vinals, Joaquin F.: *See*—
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,386,064, Cl. 424-49.000.

Virupaksha, Krishnamoorthy; and Suyderhoud, Henri G., to INTELSAT. NIC Processor using variable precision block quantization. 4,386,237, Cl. 179-15.55R.

Visidyne, Inc.: *See*—
Zehnpfennig, Theodore F.; and Aurilio, Giuseppe, 4,385,434, Cl. 29-576.00B.

Vitellaro, Frank A., to Dayco Corporation. Cutting of wire-reinforced hose. 4,385,426, Cl. 29-33.00T.

Vock, Manfred H.: *See*—
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,386,064, Cl. 424-49.000.

Voges, Dieter: *See*—
Rebafka, Walter; Schossig, Juergen; Reiss, Wolfgang; and Voges, Dieter, 4,386,208, Cl. 546-184.000.

Vokey, David E., to Canada Wire and Cable Limited. Cable assembly for detecting the ingress of water inside a cable. 4,386,231, Cl. 174-115.000.

Volchematiev, Jury V.: *See*—
Daiker, Artur L.; Veis, Anatoly I.; Bogatyrev, Anatoly D.; Kochengin, Evgeny Y.; Palko, Viktor N.; Novoselov, Nikolai M.; Volchematiev, Jury V.; and Morozov, Gennady Y., 4,385,941, Cl. 148-9.500.

Volkswagenwerk Aktiengesellschaft: *See*—
Fiala, Ernst, 4,385,604, Cl. 123-340.000.

Volkswagenwerk Aktiengesellschaft: *See*—
Bauer, Andreas; and Protze, Dieter, 4,385,549, Cl. 98-2.000.

Volz, Richard. Caster assembly for suitcases and the like. 4,385,415, Cl. 16-29.000.

Vortec Corporation: *See*—
Inglis, Leslie R.; and Peter, Joseph E., 4,385,728, Cl. 239-424.000.

Voshchenkov, Alexander M.: *See*—
Finegan, Sean N.; McFee, James H.; Swartz, Robert G.; and Voshchenkov, Alexander M., 4,385,946, Cl. 148-175.000.

Voss, George D., to Solid Fuels, Inc. Solid fuel conversion system. 4,385,567, Cl. 110-186.000.

Vrba, Jiri: *See*—
Burbank, Max B.; Lomnes, Randy K.; Vrba, Jiri; and Fife, Alistair A., 4,386,318, Cl. 324-244.000.

Vredestein Icopro B.V.: *See*—
Zijp, Jan W. H., 4,386,182, Cl. 524-375.000.

Vrignaud, Yves; and Belin, Michel. Pollen substitute for use in apiculture. 4,386,107, Cl. 426-62.000.

Vydrin, Vladimir N. Method of rolling metal articles. 4,385,511, Cl. 72-205.000.

W. Schlafhorst & Co.: *See*—
Raasch, Hans; Lenzen, Jakob; and Pohl, Klaus, 4,385,488, Cl. 57-417.000.

Wackerle, Peter; and Franz, Dieter, to Messerschmitt-Boelkow-Blohm GmbH. Method for heating a webbing reinforced by carbon fibers. 4,385,957, Cl. 156-273.900.

Wacyk, Ihor T.; and Stewart, Roger G., to RCA Corporation. Pulse generating circuit using current source. 4,386,284, Cl. 307-260.000.

Waite, Lynn E., to General Motors Corporation. Spring-biased lost-motion link assembly. 4,385,754, Cl. 267-71.000.

Waldhalm, Donald G., to Research Corporation. Vaccine against EAE. 4,386,065, Cl. 424-89.000.

Waldron, Wesley K., to General Electric Company. Flat display cell and cable with electrical and mechanical interconnection structure. 4,386,293, Cl. 313-583.000.

Walker, Dean M., to Walker Manufacturing Company. Evaporative cooler apparatus. 4,386,038, Cl. 261-80.000.

Walker, Francis H., to Stauffer Chemical Company. Method of increasing the yield of legumes utilizing chloroacetyl phenylglycine alkoxy ethyl esters. 4,385,926, Cl. 71-111.000.

Walker, Francis H.: *See*—
Fancher, Llewellyn W.; Walker, Francis H.; and Buren, Lawrence L., 4,385,923, Cl. 71-87.000.

Walker Manufacturing Company: *See*—
Walker, Dean M., 4,386,038, Cl. 261-80.000.

Wallach, Steven: *See*—
Rasala, Edward; Wallach, Steven; Alsing, Carl J.; Holberger, Kenneth D.; Holland, Charles J.; West, Thomas; Guyer, James M.; Coyle, Richard W.; Ziegler, Michael L.; and Druke, Michael B., 4,386,399, Cl. 364-200.000.

Wallevik, Oddmund; and Ronhaug, Jan B., to Norsk Hydro a.s. Method and furnace for refining of magnesium. 4,385,931, Cl. 75-67.00A.

Wallman, P. Henrik: *See*—
Rosenthal, Joel W.; and Wallman, P. Henrik, 4,385,983, Cl. 208-11.00R.

Walls, Earl M.; and Beckman, E. G., Jr. Loose-fill insulation method and apparatus. 4,385,477, Cl. 52-743.000.

Walter, Manfred: *See*—
Schuette, Wilhelm; Hilt, Albrecht; Walter, Manfred; and Boehlke, Klaus, 4,386,178, Cl. 524-100.000.

Warfel, David R.: *See*—
Blommers, Elizabeth A.; Warfel, David R.; and Ingram, Alvin R., 4,386,133, Cl. 428-407.000.

Warming, Nils: *See*—
Klein, Friedrich; Burmeister, Joachim; and Warming, Nils, 4,385,813, Cl. 351-217.000.

Warner, Donald H.: *See*—
Doerfling, Ralph G.; and Warner, Donald H., 4,385,955, Cl. 156-245.000.

Warner-Lambert Company: *See*—
Butler, Donald E.; and Nordin, Ivan C., 4,386,094, Cl. 424-263.000.

Wasel-Nielen, Horst-Dieter: *See*—
Maurer, Alexander; Adrian, Renate; Wasel-Nielen, Horst-Dieter; Sorbe, Gunter; and Kandler, Joachim, 4,386,024, Cl. 252-523.000.

Washizawa, Yasuo: *See*—
Shinozaki, Fumiaki; Washizawa, Yasuo; Ikeda, Tomoaki; Nak. , Sho; and Kondoh, Syunichi, 4,386,153, Cl. 430-285.000.

Wassmer, Norman B.: *See*—
Hodges, Joseph L.; Wassmer, Norman B.; and Myers, Paul R., 4,385,700, Cl. 209-539.000.

Watanabe, Haruo: *See*—
Itoe, Hiroshi; Watanabe, Haruo; Tateno, Hidenori; and Kobathi, Mamoru, 4,385,602, Cl. 123-339.000.

Watanabe, Kazuhiro: *See*—
Fujimaki, Hiroto; Ajima, Shigetoshi; and Watanabe, Kazuhiro, 4,386,168, Cl. 523-155.000.

Watanabe, Masakichi: *See*—
Umezu, Kenji; Watanabe, Masakichi; Nakada, Minoru; and Hitosugi, Toshiaki, 4,385,505, Cl. 62-285.000.

Watanabe, Nobuatsu; Nakajima, Tsuyoshi; Yamada, Hiroaki; and Ohsawa, Noboru, to Nobuatsu Watanabe; and Applied Science Research Institute. Process for producing a graphite fluoride type film on the surface of an aluminum substrate. 4,386,137, Cl. 428-457.000.

Watanabe, Sakuji: *See*—
Toyoda, Kenji; Araki, Yoshitaka; and Watanabe, Sakuji, 4,385,819, Cl. 354-36.000.

Watanabe, Tsuyoshi: *See*—
Nakahata, Kimio; Tanigawa, Koichi; Adachi, Hiroyuki; and Watanabe, Tsuyoshi, 4,385,829, Cl. 355-3.0DD.

Watson, Andrew W. D., to Plessey Overseas Limited. Electromagnetic noise suppression. 4,386,354, Cl. 343-18.00A.

Watts, Roger E.; and Britton, Leon R., to Guardian Electric Manufacturing Company. High power pulse operated relay. 4,386,330, Cl. 335-167.000.

Wayne H. Coloney Company, Inc.: *See*—
Benedict, Charles E.; Kimsey, Kenneth G., Jr.; and Freeman, Robert A., 4,385,696, Cl. 206-443.000.

Webb, Harry T. Cutting apparatus. 4,385,440, Cl. 30-294.000.

Webb, Watt W.; and Frish, Michael B., to Cornell Research Foundation, Inc. Direct measurement of vorticity by optical probe. 4,385,830, Cl. 356-28.000.

Webby, Charles W. Synchronous motor starter. 4,386,307, Cl. 318-705.000.

Weber, Richard D. Easy-threading sewing needles and method of making such needles. 4,385,575, Cl. 112-224.000.

Webster Electric Company, Inc.: *See*—
Francis, Ralph M., Jr., 4,386,395, Cl. 363-27.000.

Weghaupt, Erich: *See*—
Intichar, Lutz; Schnapper, Christoph; and Weghaupt, Erich, 4,386,289, Cl. 310-52.000.

Weidmann, Gunter: *See*—
Nitschmann, Karl; and Weidmann, Gunter, 4,385,442, Cl. 30-382.000.

Weidner, Evert C.; and Brecht, William B., to Exide Corporation. Watering device for batteries. 4,386,141, Cl. 429-64.000.

Weiperth, Vilmos: *See*—
Szabo, Miklos; and Weiperth, Vilmos, 4,385,714, Cl. 222-80.000.

Welsch, John H.; and Carver, Robert J., to Metropolitan Wire Corporation. Carrier for printed circuit boards. 4,385,781, Cl. 294-161.000.

Welsch, Wofgang: *See*—
Schuster-Wolden, Hans; Freller, Helmut; Kruger, Hans; Welsch, Wofgang; Peetermans, Andre; Rolke, Hans J.; and Schack, Peter, 4,385,976, Cl. 204-192.00P.

Wempe, Lawrence K., to Air Products and Chemicals, Inc. Release coatings based on polyvinyl alcohol. 4,386,183, Cl. 524-405.000.

Weppner, Werner: *See*—
Hartwig, Peter; Weppner, Werner; and Wichelhaus, Winfried, 4,386,020, Cl. 252-518.000.

Werner, Paul, to Keiper Automobiltechnik GmbH & Co. KG. Frame for a longitudinally and height-adjustable vehicle seat. 4,385,743, Cl. 248-393.000.

Weskamp, Wilhelm: *See*—
Stewen, Wilhelm; and Weskamp, Wilhelm, 4,385,962, Cl. 201-6.000.

Wesley, Victor J., to U.S. Philips Corporation. Control device for laundry drier. 4,385,451, Cl. 34-53.000.

West Company, The: *See*—
Leiter, L. David, 4,385,707, Cl. 215-253.000.

West, Thomas: *See*—
Rasala, Edward; Wallach, Steven; Alsing, Carl J.; Holberger, Kenneth D.; Holland, Charles J.; West, Thomas; Guyer, James M.; Coyle, Richard W.; Ziegler, Michael L.; and Druke, Michael B., 4,386,399, Cl. 364-200.000.

Westell, William E., to Baird Corporation. Automatic alignment system. 4,385,839, Cl. 356-400.000.

Westerberg, Gerhard, to Micronic AB. Compensating device. 4,385,835, Cl. 356-358.000.

Western Electric Company, Inc.: *See*—
Norris, Dallas G., 4,385,718, Cl. 226-68.000.

Westinghouse Electric Corp.: *See*—
Gorman, Joseph G.; and Roach, James F., 4,386,249, Cl. 200-144.00B.
Heytmeijer, Herman R., 4,386,056, Cl. 423-21.500.
Maxwell, Richard F., Jr., 4,385,834, Cl. 356-153.000.

Westman, Erik: *See*—
Larsson, Hans G.; and Westman, Erik, 4,385,878, Cl. 425-7.000.

Weyda, Gunther: *See*—
Dolata, Hans; Meyle, Werner; Kaiser, Hans-Georg; Odenwald, Gerhard; and Weyda, Gunther, 4,385,532, Cl. 76-25.00A.

Weyerhaeuser Company: *See*—
Schmidt, Phillip A., 4,385,650, Cl. 144-246.00C.

Whipple, William G.: *See*—
Granberg, Mauritz L.; Hanson, David G.; Rajala, Robert L.; and Whipple, William G., 4,386,349, Cl. 340-723.000.

Whirlpool Corporation: *See*—
Deschaaf, Clifford L.; and Getz, Edward H., 4,385,452, Cl. 34-53.000.

White, Alan W.: *See*—
Hyatt, John A.; and White, Alan W., 4,386,221, Cl. 568-28.000.

Whitear, Brian R. D.: *See*—
Mason, Leslie F. A.; Kitzing, Rainer; Whitear, Brian R. D.; Long, William E.; Wood, Glenn P.; and Reeves, David L. R., 4,386,149, Cl. 430-213.000.

Whiteway Manufacturing Co.: *See*—
Reibling, Robert L., 4,386,392, Cl. 362-297.000.

Whitney, Solon G.: *See*—
Hedrick, Harold N.; and Whitney, Solon G., 4,385,993, Cl. 210-675.000.

Whittam, Thomas V.: *See*—
Hogan, Philip J.; Stewart, Allan; and Whittam, Thomas V., 4,386,230, Cl. 585-467.000.

Wichelhaus, Winfried: *See*—
Hartwig, Peter; Weppner, Werner; and Wichelhaus, Winfried, 4,386,020, Cl. 252-518.000.

Widiger, Gary N.: *See*—
Herchen, Stephen R.; and Widiger, Gary N., 4,386,150, Cl. 430-222.000.

Wiederkehr, Hans. Spreader for granular spreading material. 4,385,729, Cl. 239-689.000.

Wiesner, Leo, to Timex Corporation. Electronic timepiece for indicating digital subdivisions of time in a substantially conventional format. 4,385,842, Cl. 368-242.000.

Wilkinson, Kenneth L. Repair of glass panel. 4,385,879, Cl. 425-12.000.

Wille, Michael T.; and Sachuk, Nicholas E., to Surgikos, Inc. Objective lens cover assembly for an operating microscope. 4,385,812, Cl. 350-587.000.

Willeford, Michael J.: *See*—
Urban, Ted F.; and Willeford, Michael J., 4,385,697, Cl. 206-497.000.

Willetts, Elwood H. Intermodal transport system. 4,385,857, Cl. 410-53.000.

Williams, Robert M. Waste material breaking and shredding apparatus. 4,385,732, Cl. 241-236.000.

Wilson Greatbatch, Ltd.: *See*—
Mead, Ralph T.; Rudolph, Frank W.; Frenz, Norbert W., Jr.; and Greatbatch, Wilson, 4,385,439, Cl. 29-623.200.

Wilson, Stephen T.; Lok, Brent M.; and Flanigen, Edith M., to Union Carbide Corporation. Adsorptive use of crystalline metallophosphate compositions. 4,385,994, Cl. 210-689.000.

Wingard, Robert E., Jr.; and Swanson, Sally A., to Dynapol. Tertiary amides as solvents in anthrapyridone syntheses. 4,386,206, Cl. 546-76.000.

Wingerd, Winston H.: *See*—
Merritt, Carleton G.; Wingerd, Winston H.; and Keller, David J., 4,386,106, Cl. 426-5.000.

Wingfield, Hale. Sequentially highlighting copy holder. 4,385,461, Cl. 40-352.000.

Wirth, Charles J., to Kamatics Corporation. Flexible coupling with quadrilateral flex frames. 4,385,895, Cl. 464-69.000.

Wisneski, Peter M., to Gulf Oil Corporation. Mixing apparatus. 4,385,840, Cl. 366-336.000.

Wissmann, Michael: *See*—
Bonse, Bernhard; Kemmner, Ulrich; Klinkenberg, Reinhard; Knapp, Heinrich; and Wissmann, Michael, 4,385,603, Cl. 123-339.000.

Withers, Jean D.; Fineo, Carlo; Withers, L. Andrew, Jr.; and Withers, Leland A., Sr., to Withers, Leland A., Sr.; and Withers, L. Andrew, Jr. Insulation blanket and band clamps. 4,385,454, Cl. 34-110.000.

Withers, Jean D.: *See*—
Withers, L. Andrew, Jr.; Withers, Leland A., Sr.; Withers, Jean D.; and Fineo, Carlo, 4,385,453, Cl. 34-110.000.
Withers, L. Andrew, Jr.; Withers, Leland A., Sr.; Withers, Jean D.; and Fineo, Carlo, 4,385,455, Cl. 34-110.000.

Withers, L. Andrew, Jr.; Withers, Leland A., Sr.; Withers, Jean D.; and Fineo, Carlo, to Withers, Leland A., Sr.; and Withers, L. Andrew, Jr. End panel insulator assembly for temperature controlled rotary cylinder. 4,385,453, Cl. 34-110.000.

Withers, L. Andrew, Jr.; Withers, Leland A., Sr.; Withers, Jean D.; and Fineo, Carlo, to Withers, Leland A., Sr.; and Withers, L. Andrew, Jr. Rotary cylinder end wall insulator with seal. 4,385,455, Cl. 34-110.000.

Withers, L. Andrew, Jr.: *See*—
Withers, Jean D.; Fineo, Carlo; Withers, L. Andrew, Jr.; and Withers, Leland A., Sr., 4,385,454, Cl. 34-110.000.

Withers, Leland A., Sr.: *See*—
Withers, Jean D.; Fineo, Carlo; Withers, L. Andrew, Jr.; and Withers, Leland A., Sr., 4,385,454, Cl. 34-110.000.
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Wohleber, David A.: *See*—
Johnson, Roger C.; Stewart, Donald L., Jr.; Tsao, Utah; and Wohleber, David A., 4,385,964, Cl. 203-50.000.

Wolf, E. George, Jr.; and Cox, Charles E. Portable emergency respiratory system. 4,385,629, Cl. 128-207.140.

Wolf, Karlheinz: *See*—
Bremer, Fritz; Kressner, Michael; Wolf, Karlheinz; Nonn, Konrad; Hornle, Reinhold; and Pape, Georg, 4,386,195, Cl. 528-73.000.

Wolf, Wolfram, to E.C.H. Will (GmbH & Co.). Apparatus for engaging and transporting discrete sheets of paper or the like. 4,385,537, Cl. 83-100.000.

Wolff, Erich: *See*—
Bergthaller, Peter; Kunitz, Friedrich-Wilhelm; Schranz, Karl-Wilhelm; and Wolff, Erich, 4,386,155, Cl. 430-372.000.

Wolterdorf, Otto, Jr.; Michelson, Stuart R.; Sondey, John M.; and Schwam, Harvey, to Merck & Co., Inc. 6-Hydroxy-2-benzothiazolesulfonamide for the topical treatment of elevated intraocular pressure. 4,386,098, Cl. 424-270.000.

Wood, Darwin L.: *See*—
Amelse, Jeffrey A.; Bohrer, Michael P.; and Wood, Darwin L., 4,385,915, Cl. 65-3.120.

Wood, Eric, to Insituform International, Inc. Lining of passageways. 4,385,885, Cl. 425-387.100.

Wood, Glenn P.: *See*—
Mason, Leslie F. A.; Kitzing, Rainer; Whitear, Brian R. D.; Long, William E.; Wood, Glenn P.; and Reeves, David L. R., 4,386,149, Cl. 430-213.000.

Wood, Paul B.: *See*—
Pandya, Yogendra C.; and Wood, Paul B., 4,386,410, Cl. 364-518.000.

Wood, Robin: *See*—
Brittain, David R.; and Wood, Robin, 4,386,100, Cl. 424-273.00R.

Worcester Controls Corporation: *See*—
Renaud, Paul, Jr.; and Paradis, Kenneth, 4,385,747, Cl. 251-315.000.

Wroclawski, John T.: *See*—
Hammond, Ogden H., III; and Wroclawski, John T., 4,385,843, Cl. 374-43.000.

Wu, Tse C.; and Segal, Leon, to Allied Corporation. Interfacial process for producing poly(ester-carbonate) containing phenolphthalein. 4,386,196, Cl. 528-182.000.

Wuchner, Fritz: *See*—
Krevet, Berthold; Schauer, Wolfgang; and Wuchner, Fritz, 4,386,115, Cl. 427-62.000.

Wuerzer, Bruno: *See*—
Theobald, Hans; Wuerzer, Bruno; and Kiehs, Karl, 4,385,924, Cl. 71-88.000.

Wyle Laboratories: *See*—
Cappel, Klaus L., 4,385,524, Cl. 73-663.000.

Xerox Corporation: *See*—
Beery, Jack, 4,385,756, Cl. 271-186.000.
Fischbeck, Kenneth H., 4,386,358, Cl. 346-1.100.
Naramore, Raymond A., 4,385,827, Cl. 355-14.0SH.

Yagi, Kenkichi: *See*—
Tanaka, Minoru; and Yagi, Kenkichi, 4,386,127, Cl. 428-91.000.

Yamabe, Taiji: *See*—
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Yamada, Hiroaki: *See*—
Watanabe, Nobuatsu; Nakajima, Tsuyoshi; Yamada, Hiroaki; and Ohsawa, Noboru, 4,386,137, Cl. 428-457.000.

Yamada, Kouzi: *See*—
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Kuwana, Noriaki; Abe, Shinya; and Yamada, Kouzi, 4,386,227, Cl. 568-875.000.

Yamada, Mitsuhiko, to Dainippon Screen Seizo Kabushiki Kaisha. Color isolation method. 4,386,267, Cl. 250-226.000.

Yamada, Yutaka: *See*—
Seimiya, Ryubun; Yamada, Yutaka; Tomono, Makoto; Tarumi, Noriyoshi; Fujisaki, Yasuyuki; Takahashi, Minoru; Ogawara, Hiroshi; and Funaki, Hirozo, 4,386,147, Cl. 430-99.000.

Yamaguchi, Hiroaki: *See*—
Hattori, Tadashi; Goto, Kenji; Sawada, Daisaku; Shigematu, Takashi; Yamaguchi, Hiroaki; and Nishida, Minoru, 4,385,606, Cl. 123-416.000.

Yamaguchi, Masashi: *See*—
Imazeki, Ryoji; Yamazaki, Etsuo; Sasaki, Takao; and Yamaguchi, Masashi, 4,386,408, Cl. 364-474.000.

Yamamoto, Toru, to Nippon Electric Co., Ltd. Memory device with variable load. 4,386,419, Cl. 365-203.000.

Yamamoto, Yasunobu; Sakabe, Toshiaki; and Hamada, Eiji, to Aisin Seiki Company, Limited; and Aisin Kako Kabushiki Kaisha. Motor vehicle clutch facing and friction property modifier therefor. 4,385,682, Cl. 192-107.00M.

Yamamoto, Yoshimi, to Fuji Kiko Kabushiki Kaisha. Retractor for seat belt. 4,385,736, Cl. 242-107.000.

Yamamoto, Yoshio; Nagaoka, Yukio; and Yokoajiro, Yoshiyuki, to Matsushita Electric Industrial Co., Ltd. Combustion control apparatus. 4,385,887, Cl. 431-90.000.

Yamamoto, Yujiro. Security apparatus with audible alarm of enhanced urgency. 4,386,341, Cl. 340-384.00E.

Yamane, Ken, to Nissan Motor Co., Ltd. Intake system for internal combustion engine provided with supercharger. 4,385,496, Cl. 60-599.000.

Yamasa Shoyu Kabushiki Kaisha: *See*—
Machida, Haruhiko; and Sakata, Shinji, 4,386,076, Cl. 424-180.000.

Yamashita, Fumio: *See*—
Iwata, Shouji; Tanaka, Masaru; Yamashita, Fumio; Kurobe, Hideharu; and Itani, Takuo, 4,385,486, Cl. 57-58.520.

Yamato Scale Company, Ltd.: *See*—
Hirano, Takashi, 4,385,671, Cl. 177-25.000.

Yamauchi, Koji: *See*—
Matsuoka, Shigeru; Tokunaga, Takeshi; Yonekura, Seiji; Yamauchi, Koji; and Suzuki, Mitsuo, 4,386,398, Cl. 364-167.000.

Yamazaki, Etsuo: *See*—
Imazeki, Ryoji; Yamazaki, Etsuo; Sasaki, Takao; and Yamaguchi, Masashi, 4,386,408, Cl. 364-474.000.

Yanagi, Toshiaki, to Brother Kogyo Kabushiki Kaisha. Programming system for automatic sewing machine. 4,385,570, Cl. 112-121.120.

Yasuda, Hiroki: *See*—
Ohgami, Masaaki; Yasuda, Hiroki; and Suzuki, Hitoshi, 4,385,608, Cl. 123-440.000.

Yasuharu, Kikuchi: *See*—
Kazuo, Eda; Yasuharu, Kikuchi; Osamu, Makino; and Matsuoka, Michio, 4,386,021, Cl. 252-519.000.

Yasui, Masaru: *See*—
Aoki, Shigeo; Isogami, Shuzo; Tamamura, Junichi; Nagayoshi, Tatsuo; Yasui, Masaru; and Hirao, Susumu, 4,385,473, Cl. 51-281.00R.

Yasui, Shigeo: *See*—
Kishino, Shigeru; Yasui, Shigeo; Takahata, Kei; and Ohkawa, Masakuni, 4,386,146, Cl. 430-95.000.

Yasukawa, Shouzo, to Nikko Industry Co., Ltd. Apparatus for preheating material for making steel. 4,385,889, Cl. 432-179.000.

Yates, Frank S.: *See*—
Adey, Kenneth A.; Yates, Frank S.; and Young, John H., 4,386,226, Cl. 568-804.000.

Yeda Research and Development Company: *See*—
Hodes, Gary; Manassen, Joost; and Cahen, David, 4,386,142, Cl. 429-111.000.

Yeo, Yung K.: *See*—
Park, Yoon S.; and Yeo, Yung K., 4,385,938, Cl. 148-1.500.

Yevick, George J. Piezoelectric light beam deflector. 4,385,798, Cl. 350-96.140.

Yokoajiro, Yoshiyuki: *See*—
Yamamoto, Yoshio; Nagaoka, Yukio; and Yokoajiro, Yoshiyuki, 4,385,887, Cl. 431-90.000.

Yokota, Minoru; and Kitagawa, Masamichi, to Konishiroku Photo Industry Co., Ltd. Copying lens. 4,385,809, Cl. 350-475.000.

Yonechi, Shinichi, to Sumitomo Electric Industries Ltd. Methods and apparatus for fabricating optical fiber cables. 4,385,485, Cl. 57-13.000.

Yonekura, Seiji: *See*—
Matsuoka, Shigeru; Tokunaga, Takeshi; Yonekura, Seiji; Yamauchi, Koji; and Suzuki, Mitsuo, 4,386,398, Cl. 364-167.000.

Yoshiaki, Kinsui. Process and appliance for handily cultivating malts of many species. 4,385,468, Cl. 47-14.000.

Yoshida, Bunsaku: *See*—
Sato, Atsushige; Miura, Ishi; Kumei, Yasuhiro; Okuno, Osamu; and Yoshida, Bunsaku, 4,385,892, Cl. 433-228.000.

Yoshida, Ekuo: *See*—
Takeuchi, Makoto; Yoshida, Ekuo; and Kohno, Masahiro, 4,386,054, Cl. 422-63.000.

Yoshida Kogyo K. K.: *See*—
Nakamura, Kenichi, 4,385,475, Cl. 52-709.000.
Takeshima, Kiyoshi, 4,386,043, Cl. 264-167.000.

Yoshida, Shuzo; Matsuoka, Hiroki; Nogami, Susumu; Ono, Hironobu; Sueishi, Motoharu; and Ueda, Kazuo, to Nippondenso Co., Ltd.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Air-fuel ratio feedback control system. 4,385,613, Cl. 123-489.000.

Yoshida, Tatsumasa: *See*—
Masuda, Yoshio; Fukasawa, Atsushi; Sato, Takuro; Yoshida, Tatsumasa; and Ando, Hiromi, 4,386,328, Cl. 333-202.000.

Yoshida, Toyonobu: *See*—
Akashi, Kazuo; Yoshida, Toyonobu; and Ishizuka, Ryuichi, 4,386,258, Cl. 219-121.0PM.

Yoshida, Tsuneo: *See*—
Kohzuki, Keiji; and Yoshida, Tsuneo, 4,386,331, Cl. 335-211.000.

Yoshikawa, Yutaka. Heat insulating laminate. 4,386,128, Cl. 428-152.000.

Yoshimi, Tomohisa; Kuno, Akira; and Shinoda, Yoshio, to Nippon Soken, Inc. Switch apparatus for vehicle. 4,386,279, Cl. 307-10.00R.

Yoshimoto, Akihiro: *See*—
Oki, Toshikazu; Yoshimoto, Akihiro; Kouno, Kageaki; Inui, Taiji; Takeuchi, Tomio; and Umezawa, Hamao, 4,386,198, Cl. 536-6.400.

Yoshimura, Shigekazu, to Honda Giken Kogyo Kabushiki Kaisha. Fuel feed system for carburetors on motorcycles. 4,385,676, Cl. 180-219.000.

Yoshimura, Yoji: *See*—
Endoh, Seiji; Tada, Shotaro; Kuga, Toru; Takeda, Yasuo; Mitsui, Kazuo; and Yoshimura, Yoji, 4,385,795, Cl. 339-176.0MF.

Yoshimura, Yoshikazu, to Matsushita Electric Industrial Co., Ltd. Dielectric-resonator-tuned microwave solid state oscillator. 4,386,326, Cl. 331-96.000.

Yoshino Kogyosho Co., Ltd.: *See*—
Yoshino, Yataro; Suzuki, Sadao; and Takada, Takuzo, 4,386,046, Cl. 264-296.000.

Yoshino, Yataro; Suzuki, Sadao; and Takada, Takuzo, to Yoshino Kogyosho Co., Ltd. Neck orienting method of bottles of saturated polyester resins. 4,386,046, Cl. 264-296.000.

Yoshioka, Yoshihiro; Harima, Hiroshi; and Nishimura, Motokazu, to Kurary Isoprene Chemical Co., Ltd.; and C. I. Kasei Co., Ltd. Water-swellable composition and leakage preventing material therewith. 4,386,172, Cl. 523-408.000.

Yoshitomi Pharmaceutical Industries, Ltd.: *See*—
Oe, Takanori; Moriwaki, Minoru; Goto, Kazuhiro; and Hisadome, Masao, 4,386,092, Cl. 424-256.000.

Young, David S. Plastic bearing materials. 4,386,118, Cl. 427-178.000.

Young, Donald E. Cutting device with renewable cutting edge. 4,385,441, Cl. 30-314.000.

Young, Jeff F.; and Friedmann, Daniel, to Friedmann, Youn and Associates Inc. Electric field detector. 4,386,315, Cl. 324-120.000.

Young, John H.: *See*—
Adey, Kenneth A.; Yates, Frank S.; and Young, John H., 4,386,226, Cl. 568-804.000.

Youngken, Carle H.: *See*—
Reichert, William W.; Cody, Charles A.; and Youngken, Carle H., 4,386,059, Cl. 423-307.000.

Yukawa, Seiki: *See*—
Kawada, Shigeo; Akaku, Fumiyoshi; and Yukawa, Seiki, 4,386,278, Cl. 307-9.000.

Zacheri, Anton, to Motoren und Turbinen Union Munchen GmbH. Sealing device for the free ends of variable stator vanes of a gas turbine. 4,385,864, Cl. 415-136.000.

Zahnradfabrik Friedrichshafen, AG: *See*—
Lang, Armin, 4,385,493, Cl. 60-464.000.
Merz, Johann, 4,385,870, Cl. 417-273.000.

Zarnoch, Kenneth P.: *See*—
Baumgartner, Charles E.; and Zarnoch, Kenneth P., 4,386,040, Cl. 264-56.000.

Zboralski, Jon A., to Hamilton Industries, Inc. Fume hood with sash lock. 4,385,551, Cl. 98-115.0LH.

Zeeh, Bernd: *See*—
Rentzea, Costin; Feuerherd, Karl-Heinz; Zeeh, Bernd; and Jung, Johann, 4,385,925, Cl. 71-92.000.

Zehnpfennig, Theodore F.; and Aurilio, Giuseppe, to Visidyne, Inc. Alignment system. 4,385,434, Cl. 29-576.00B.

Zellers, Mabel W. Supporting element for radiant heating module. 4,386,260, Cl. 219-345.000.

Zenith Radio Corporation: *See*—
Slater, Robert E., 4,386,372, Cl. 358-237.000.

Zepp, Charles M.: *See*—
Locatell, Louis, Jr.; Rogers, Howard G.; Bilofsky, Ruth C.; Ciecisch, Ronald F.; and Zepp, Charles M., 4,386,216, Cl. 549-394.000.

Ziegler, Georg, to Sulzer Brothers Limited. Hot gas cooler. 4,385,501, Cl. 62-129.000.

Ziegler, Michael L.: *See*—
Rasala, Edward; Wallach, Steven; Alsing, Carl J.; Holberger, Kenneth D.; Holland, Charles J.; West, Thomas; Guyer, James M.; Coyle, Richard W.; Ziegler, Michael L.; and Druke, Michael B., 4,386,399, Cl. 364-200.000.

Zijp, Jan W. H., to Vredestein Icopro B.V. Thermoplastic elastomeric composition containing vulcanized rubber particles and surfactant and process for preparation thereof. 4,386,182, Cl. 524-375.000.

Zodrow, Rudolf; Rosenberg, Heinz J.; and Buchholz, Rainer, to Jagenberg-Werke AG. Gluing apparatus for a labeling machine. 4,385,960, Cl. 156-568.000.

Zoleski, Benjamin H.; Sung, Rodney L.; and Cullen, William P., to Texaco Inc. Marine crankcase lubricant. 4,386,001, Cl. 252-32.70E.

Zook, Kenneth W. Floatable pool cover. 4,385,407, Cl. 4-499.000.

Zuech, Ernest A.: *See*—
Heckelsberg, Louis F.; Nelson, William T.; Schiff, Sidney; and Zuech, Ernest A., 4,386,229, Cl. 585-255.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 31ST DAY OF MAY, 1983

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Adeka Argus Chemical Co., Ltd.: *See*—
Minagawa, Motonobu; Kubota, Naohiro; and Shibata, Toshihiro, Re. 31,261, Cl. 524-100.000.

Air Monitor Corporation: *See*—
De Baun, Kenneth W., Re. 31,258, Cl. 138-37.000.

Borg-Warner Corporation: *See*—
Gopalakrishnan, Sankaraiyer; and Kuivinen, William L., Re. 31,259, Cl. 415-56.000.

Brunelle, Daniel J., to General Electric Company. Polycarbonate transesterification. Re. 31,262, Cl. 528-200.000.

Buhler, Kurt K.: *See*—
Glaser, Fritz; Gortz, Christoph; Buhler, Kurt K.; Klimmer, Josef W.; Laberheim, Rene; Pauli, Klaus H.; and Velten, Werner, Re. 31,257, Cl. 130-27.00L.

Chignac, Michel; Grain, Claude; and Pigerol, Charles, to Labaz. Process for the preparation of an acetonitrile derivative. Re. 31,260, Cl. 260-465.100.

De Baun, Kenneth W., to Air Monitor Corporation. Fluid velocity equalizing apparatus. Re. 31,258, Cl. 138-37.000.

Deere & Company: *See*—
Glaser, Fritz; Gortz, Christoph; Buhler, Kurt K.; Klimmer, Josef W.; Laberheim, Rene; Pauli, Klaus H.; and Velten, Werner, Re. 31,257, Cl. 130-27.00L.

General Electric Company: *See*—
Brunelle, Daniel J., Re. 31,262, Cl. 528-200.000.

Glaser, Fritz; Gortz, Christoph; Buhler, Kurt K.; Klimmer, Josef W.; Laberheim, Rene; Pauli, Klaus H.; and Velten, Werner, to Deere & Company. Adjustable guide vanes for an axial flow rotary separator. Re. 31,257, Cl. 130-27.00L.

Gopalakrishnan, Sankaraiyer; and Kuivinen, William L., to Borg-Warner Corporation. Two-stage turbo compressor. Re. 31,259, Cl. 415-56.000.

Gortz, Christoph: *See*—
Glaser, Fritz; Gortz, Christoph; Buhler, Kurt K.; Klimmer, Josef W.; Laberheim, Rene; Pauli, Klaus H.; and Velten, Werner, Re. 31,257, Cl. 130-27.00L.

Grain, Claude: *See*—
Chignac, Michel; Grain, Claude; and Pigerol, Charles, Re. 31,260, Cl. 260-465.100.

Klimmer, Josef W.: *See*—
Glaser, Fritz; Gortz, Christoph; Buhler, Kurt K.; Klimmer, Josef W.; Laberheim, Rene; Pauli, Klaus H.; and Velten, Werner, Re. 31,257, Cl. 130-27.00L.

Kubota, Naohiro: *See*—
Minagawa, Motonobu; Kubota, Naohiro; and Shibata, Toshihiro, Re. 31,261, Cl. 524-100.000.

Kuivinen, William L.: *See*—
Gopalakrishnan, Sankaraiyer; and Kuivinen, William L., Re. 31,259, Cl. 415-56.000.

Labaz: *See*—
Chignac, Michel; Grain, Claude; and Pigerol, Charles, Re. 31,260, Cl. 260-465.100.

Laberheim, Rene: *See*—
Glaser, Fritz; Gortz, Christoph; Buhler, Kurt K.; Klimmer, Josef W.; Laberheim, Rene; Pauli, Klaus H.; and Velten, Werner, Re. 31,257, Cl. 130-27.00L.

Minagawa, Motonobu; Kubota, Naohiro; and Shibata, Toshihiro, to Adeka Argus Chemical Co., Ltd. 2,2,6,6-Tetrasubstituted-4-piperidyl carboxy heterocyclic compounds as stabilizers for synthetic polymers. Re. 31,261, Cl. 524-100.000.

Pauli, Klaus H.: *See*—
Glaser, Fritz; Gortz, Christoph; Buhler, Kurt K.; Klimmer, Josef W.; Laberheim, Rene; Pauli, Klaus H.; and Velten, Werner, Re. 31,257, Cl. 130-27.00L.

Pigerol, Charles: *See*—
Chignac, Michel; Grain, Claude; and Pigerol, Charles, Re. 31,260, Cl. 260-465.100.

RCA Corporation: *See*—
Schade, Otto H., Jr., Re. 31,263, Cl. 330-288.000.

Schade, Otto H., Jr., to RCA Corporation. Amplifier circuits. Re. 31,263, Cl. 330-288.000.

Schmidt, Robert H. Automatic damper means and controls therefor. Re. 31,256, Cl. 126-307.00A.

Shibata, Toshihiro: *See*—
Minagawa, Motonobu; Kubota, Naohiro; and Shibata, Toshihiro, Re. 31,261, Cl. 524-100.000.

Velten, Werner: *See*—
Glaser, Fritz; Gortz, Christoph; Buhler, Kurt K.; Klimmer, Josef W.; Laberheim, Rene; Pauli, Klaus H.; and Velten, Werner, Re. 31,257, Cl. 130-27.00L.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Annus, Imre; Cser, Gyula; Florian, Sandor; Horvath, Gyorgy; and Kocsis, Ferenc, to Autoipari Kutato Intezet and Csepel Autogyar. Turbocharged interval combustion engine with resonance induction pipe system. B1 3,796,048, Cl. 60—605.

Autoipari Kutato Intezet and Csepel Autogyar: *See*—
Annus, Imre; Cser, Gyula; Florian, Sandor; Horvath, Gyorgy; and Kocsis, Ferenc. B1 3,796,048, Cl. 60—605.

Brentini, Attilio. Closure device. B1 4,129,021, Cl. 70—456 R.

Bennewitz, Paul F.; and Bennewitz, Matt C. Device and method of manufacturing a relative humidity sensor and temperature sensor. B1 4,288,775, Cl. 338—35.

LIST OF DESIGN PATENTEES

AB Trama: *See*—
Lohman, Oskar R., 269,143, Cl. D6-92.000.

Aoyama, Yoshihiko; and Kitagawa, Makoto, to Honda Giken Kogyo Kabushiki Kaisha, Honda Motor Co., Ltd. Motorcycle. 269,170, 5-31-83, Cl. D12-110.000.

Appel, Mel; and Kress, George, to Appel, Mel. Toy desk. 269,196, 5-31-83, Cl. D21-121.000.

Arima, Koichi: *See*—
Ikeda, Hitoshi; Satoh, Masahiro; and Arima, Koichi, 269,171, Cl. D12-110.000.

Balbinot, Renzo, to Nordica S.p.A. Boot. 269,137, 5-31-83, Cl. D2-275.000.

Ban, Koichiro; Kawashima, Tsunemi; Yamada, Kazunori; and Shimizu, Toshiharu, to Yamaha Hatsudoki Kabushiki Kaisha. Motorcycle. 269,169, 5-31-83, Cl. D12-110.000.

Berman, Laurie. Combined carrying tray and sliding drawer. 269,218, 5-31-83, Cl. D34-44.000.

Boeing Company, The: *See*—
Friebel, Gottfried O., 269,176, Cl. D12-338.000.
Rose, Walter T., 269,155, Cl. D8-356.000.

Bowman, Jimmie. End stanchion for a park bench. 269,146, 5-31-83, Cl. D6-192.000.

Buck, David L.: *See*—
Ingley, Peter; and Buck, David L., 269,174, Cl. D12-147.000.

Bugay, Frederick. Toothbrush handle. 269,141, 5-31-83, Cl. D4-25.000.

Baring, Klas; and Eghamn, Lars A. Shin guard. 269,134, 5-31-83, Cl. D2-27.000.

Butler, Cletis O. Game piece. 269,194, 5-31-83, Cl. D21-51.000.

Caine, Charles L. Cart. 269,215, 5-31-83, Cl. D34-17.000.

Candiliotis, Gerassimos C., to Uniroyal, Inc. Pneumatic tire tread and buttress. 269,173, 5-31-83, Cl. D12-146.000.
Capital Industries, Inc.: *See*—
Trkla, Theodore; and Throolin, William A., 269,148, Cl. D7-77.000.
Carbajales Santa-Eulalia, Javier B.: *See*—
Carbajales Santa-Eulalia, Jesus A.; and Carbajales Santa-Eulalia, Javier B., 269,167, Cl. D11-158.000.
Carbajales Santa-Eulalia, Jesus A.; and Carbajales Santa-Eulalia, Javier B., 269,168, Cl. D11-158.000.
Carbajales Santa-Eulalia, Jesus A.; and Carbajales Santa-Eulalia, Javier B., to John J. Madison Company Inc. Figurine of a persian cat. 269,167, 5-31-83, Cl. D11-158.000.
Carbajales Santa-Eulalia, Jesus A.; and Carbajales Santa-Eulalia, Javier B., to John J. Madison Company, Inc. Figurine of a skunk. 269,168, 5-31-83, Cl. D11-158.000.
Carney, James, Jr. Plastic bag support with integral hinged cover. 269,160, 5-31-83, Cl. D9-434.000.
CBS Inc.: *See*—
Wilson, Gregg; and Page, John F., 269,186, Cl. D17-14.000.
Clarke, Daryl L. Portable hydrotherapeutic bubble mat. 269,208, 5-31-83, Cl. D24-38.000.
Contemporary Shells, Inc.: *See*—
Umanoff, Arthur, 269,142, Cl. D6,56.000.
Cutlip, David S.; and Cutlip, Judyth. Vehicle signal light. 269,210, 5-31-83, Cl. D26-28.000.
Cutlip, Judyth: *See*—
Cutlip, David S.; and Cutlip, Judyth, 269,210, Cl. D26-28.000.
Dowe, Franklin L. Bath tub scrubber. 269,212, 5-31-83, Cl. D32-51.000.
Driscoll, John L. Face for motor vehicle speedometer and odometer. 269,165, 5-31-83, Cl. D10-125.000.
Druiz, Fae E.; and Roth, Carole, to General Mills Products Corp. Jewelry display stand. 269,145, 5-31-83, Cl. D6-157.000.
Dunlop Limited: *See*—
Ingley, Peter; and Buck, David L., 269,174, Cl. D12-147.000.
Eghamn, Lars A.: *See*—
Buring, Klas; and Eghamn, Lars A., 269,134, Cl. D2-27.000.
Fenne, Kenneth R., to Pittway Corporation. Smoke detector. 269,161, 5-31-83, Cl. D10-106.000.
Figur, Bernd: *See*—
Stuetzer, Franz A.; and Figur, Bernd, 269,211, Cl. D27-42.000.
Fire Nymph Products, Limited: *See*—
Wilkinson, Norman, 269,203, Cl. D23-97.000.
Foggia, Donald A.; Muzumdar, Deepak R.; Klaiber, Gerhart F.; and Schneider, Rolf E., to Siemens Corporation. Telephone with display. 269,178, 5-31-83, Cl. D14-58.000.
Foggia, Donald A.; Muzumdar, Deepak R.; Klaiber, Gerhart F.; and Schneider, Rolf E., to Siemens Corporation. Small telephone keyset. 269,179, 5-31-83, Cl. D14-58.000.
Freedman, Melvin S.; and Walters, James F. Cutting tool. 269,154, 5-31-83, Cl. D8-98.000.
Friebel, Gottfried O., to Boeing Company, The. Supersonic airplane. 269,176, 5-31-83, Cl. D12-338.000.
Friedman, Jack J. Sign bracket. 269,192, 5-31-83, Cl. D20-41.000.
Gaunt, Thomas N., to Plastona (John Waddington) Limited. Can or the like. 269,158, 5-31-83, Cl. D9-370.000.
General Mills Products Corp.: *See*—
Druiz, Fae E.; and Roth, Carole, 269,145, Cl. D6-157.000.
Gibbons, Margaret K. Combined monkey figure and wheel chair. 269,197, 5-31-83, Cl. D21-156.000.
Glassman, Richard D. Cervical dilator. 269,206, 5-31-83, Cl. D24-23.000.
Greenheck, Robert R., to R. & D. Greenheck Manufacturing Co., Inc. Load carrying dolly. 269,216, 5-31-83, Cl. D34-23.000.
Grethey, Albert K.: *See*—
Moore, Walter E.; and Grethey, Albert K., 269,190, Cl. D20-4.000.
Hegarty, Bernard L. Combined right angled fence post and cap. 269,209, 5-31-83, Cl. D25-78.000.
Heilman, Marlin S.: *See*—
Langer, Alois A.; and Heilman, Marlin S., 269,205, Cl. D24-17.000.
Hexacon Property ApS: *See*—
Petersen, Thorbjorn, 269,187, Cl. D19-32.000.
HMC-Brauer Limited: *See*—
Whitbread, David A., 269,153, Cl. D8-72.000.
Hodlewsky, Wasyly G.; and Schroeder, Roger H., to Rexnord Inc. Corner disc for chain conveyors. 269,217, 5-31-83, Cl. D34-35.000.
Holmes, John S. Combined belt and holders for beverage accessories. 269,140, 5-31-83, Cl. D2-381.000.
Honda Giken Kogyo Kabushiki Kaisha, Honda Motor Co., Ltd.: *See*—
Aoyama, Yoshihiko; and Kitagawa, Makoto, 269,170, Cl. D12-110.000.
Ikeda, Hitoshi; Satoh, Masahiro; and Arima, Koichi, 269,171, Cl. D12-110.000.
Honig, John. Packaging container for shears. 269,159, 5-31-83, Cl. D9-415.000.
Iijima, Kazuhiro, to Victor Company of Japan, Limited. Combined tape recorder and radio receiver. 269,177, 5-31-83, Cl. D14-5.000.
Ikeda, Hitoshi; Satoh, Masahiro; and Arima, Koichi, to Honda Giken Kogyo Kabushiki Kaisha, Honda Motor Co., Ltd. Motorcycle. 269,171, 5-31-83, Cl. D12-110.000.
Ingley, Peter; and Buck, David L., to Dunlop Limited. Tire. 269,174, 5-31-83, Cl. D12-147.000.
ITT Industries, Inc.: *See*—
Schulein, Rolf-Gunter, 269,150, Cl. D8-39.000.
Schulein, Rolf-Gunter, 269,151, Cl. D8-39.000.
John J. Madison Company Inc.: *See*—
Carbajales Santa-Eulalia, Jesus A.; and Carbajales Santa-Eulalia, Javier B., 269,167, Cl. D11-158.000.
Carbajales Santa-Eulalia, Jesus A.; and Carbajales Santa-Eulalia, Javier B., 269,168, Cl. D11-158.000.
Kabushiki Kaisha Matsuzaka Tekkosho (MCC Corporation): *See*—
Nakamura, Masahiko, 269,152, Cl. D8-52.000.
Kawaishi, Masayoshi: *See*—
Miyake, Takao; Kawaishi, Masayoshi; and Numano, Masafumi, 269,149, Cl. D7-351.000.
Kawashima, Tsunemi: *See*—
Ban, Koichiro; Kawashima, Tsunemi; Yamada, Kazunori; and Shimizu, Toshiharu, 269,169, Cl. D12-110.000.
Kerber, Marvin C.: *See*—
Whalen, Bernard F.; Whalen, Patrick T.; and Kerber, Marvin C., 269,182, Cl. D15-27.000.
Kitagawa, Makoto: *See*—
Aoyama, Yoshihiko; and Kitagawa, Makoto, 269,170, Cl. D12-110.000.
Klaiber, Gerhart F.: *See*—
Foggia, Donald A.; Muzumdar, Deepak R.; Klaiber, Gerhart F.; and Schneider, Rolf E., 269,178, Cl. D14-58.000.
Foggia, Donald A.; Muzumdar, Deepak R.; Klaiber, Gerhart F.; and Schneider, Rolf E., 269,179, Cl. D14-58.000.
Kress, George: *See*—
Appel, Mel; and Kress, George, 269,196, Cl. D21-121.000.
Langer, Alois A.; and Heilman, Marlin S., to Mirowski, Mieczyslaw. Implantable defibrillator or similar article. 269,205, 5-31-83, Cl. D24-17.000.
Langmyr, Rita. Trousers. 269,135, 5-31-83, Cl. D2-28.000.
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662 4,385,992
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	4,385,623		4,386,379		4,385,458		4,385,547		4,386,184		4,386,349
	4,385,637		4,386,415		4,385,462		4,385,595		4,386,187		4,386,359
	4,385,644		4,386,417		4,385,465		4,385,674		4,386,188		4,386,414
	4,385,645		4,386,418		4,385,471		4,385,680		4,386,216	29 :	4,385,477
	4,385,663		4,386,420		4,385,474		4,385,718		4,386,270		4,385,550
	4,385,664		4,386,422		4,385,476		4,385,759		4,386,292		4,385,713
	4,385,692	08 :	4,385,470		4,385,482		4,385,898		4,386,312		4,385,732
	4,385,702		4,385,592		4,385,502		4,385,936		4,386,391		4,385,760
	4,385,721		4,385,765		4,385,540		4,386,C..		4,386,399		4,385,921
	4,385,724		4,385,784		4,385,563		4,386,091	26 :	4,385,424		4,386,003
	4,385,727		4,386,038		4,385,567		4,386,209		4,385,427		4,386,202
	4,385,755		4,386,333		4,385,575		4,386,369		4,385,428		4,386,215
	4,385,761		4,386,339		4,385,605		4,386,371		4,385,452		4,386,224
	4,385,766		4,386,357		4,385,673		4,386,377		4,385,472	32 :	4,385,481
	4,385,768	09 :	4,385,443		4,385,679	19 :	4,385,591		4,385,514	33 :	4,385,403
	4,385,774		4,385,535		4,385,688		4,385,594		4,385,543		4,385,499
	4,385,777		4,385,758		4,385,690		4,386,057		4,385,582		4,385,589
	4,385,785		4,385,788		4,385,691	20 :	4,385,412		4,385,586		4,386,334
	4,385,792		4,385,812		4,385,708		4,386,103		4,385,628		4,386,428
	4,385,814		4,385,895		4,385,770	21 :	4,386,392		4,385,695	34 :	Re.31,263
	4,385,816		4,385,956		4,385,793	22 :	4,385,422		4,385,737		4,385,426
	4,385,833		4,386,112		4,385,849		4,385,533		4,385,740		4,385,431
	4,385,837		4,386,191		4,385,852		4,385,580		4,385,853		4,385,494
	4,385,841		4,386,205		4,385,882		4,385,742		4,385,876		4,385,573
	4,385,906		4,386,228		4,385,910		4,385,780		4,385,899		4,385,574
	4,385,911		4,386,246		4,385,978		4,385,874		4,385,909		4,385,576

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